Subject: Science **Key assessment criteria**

Working scientifically Biology Physics Chemistry

Nursery	Reception
Communication and Language **3 / 4 Year olds:** ● Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" ● **Physical Development** **3 / 4 Year olds:** ● Make healthy choices about food, drink, activity and toothbrushing. ● **Understanding the World - The Natural World - Science** **3 / 4 year olds:** ● Use all their senses in hands-on exploration of natural materials. ● Explore collections of materials with similar and/or different properties. ● Talk about what they see, using a wide vocabulary. ● Begin to make sense of their own life-story and family's history. ● Explore how things work. ● Plant seeds and care for growing plants. ● Understand the key features of the life cycle of a plant and an animal. ● Begin to understand the need to respect and care for the natural environment and all living things. ● Explore and talk about different forces they can feel. ● Talk about the differences between materials and changes they notice. Science is introduced indirectly through activities that encourage children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.	**Personal, Social, Emotional Development** **ELG: PSED: Managing Self:** ● Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **Communication and Language** **Reception:** ● Learn new vocabulary. ● Ask questions to find out more and to check what has been said to them. ● Articulate their ideas and thoughts in well-formed sentences. ● Describe events in some detail. ● Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. ● Use new vocabulary in different contexts. **ELG: C&L: Listening, attention and Understanding:** ● Make comments about what they have heard and ask questions to clarify their understanding. **Physical Development** **Reception:** Know and talk about the different factors that support their overall health and wellbeing: regular physical activity, healthy eating, toothbrushing, sensible amounts of 'screen time', having a good sleep routine, being a safe pedestrian. **Understanding the World - The Natural World - Science** **Reception** ● Explore the natural world around them. ● Describe what they see, hear and feel while they are outside. ● Recognise some environments that are different to the one in which they live. ● Understand the effect of changing seasons on the natural world around them. **ELG: UTW: The Natural World** ● Explore the natural world around them, making observations and drawing pictures of animals and plants. ● Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

	• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Science is introduced indirectly through activities that encourage children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.

Year 1	Year 2	Year 3
Working Scientifically **Questioning** - I can ask a simple question linked to the science we are learning. **Planning** - I can begin to recognise that my questions can be answered in different ways. I can understand that my questions can be answered by enquiry. **Observing** - I can observe closely and describe what I see. **Recording** - I can gather and record information to help answer questions. **Concluding** - I can use observations and ideas to suggest answers. Animals (including humans) I can group animals by their diet. I know that most animals have a skeleton but these can look different. I can name parts of the human body, including the sense organs. Plants I can name many different varieties of plants and trees. I know that trees are categorised as deciduous or evergreen. I can identify the main parts of a flowering plant: roots, stem, petals and leaves. Seasonal Changes I can name the four seasons of Summer, Autumn, Winter and Spring, describing how they are different. I can describe the different types of weather in the different seasons we have. I know that some trees change, depending on the season and the weather. Materials I can distinguish between an object and its material, knowing that an object can consist of many materials. I can describe the different physical properties of materials, such as being strong, flexible or waterproof. I can group materials together when they share similar properties.	Working Scientifically **Questioning** - I can ask a simple question based on prior knowledge I can ask an open question that might have many different answers I recognise that my questions can be answered in different ways. **Planning** - I can begin to suggest ways that I can answer my question through different types of enquiry **Observing** - I can observe closely using given measuring equipment I can perform simple tests **Recording** - I can gather and record accurate data to help in answering questions including numerical data when appropriate **Concluding** - I can answer an enquiry question using data and ideas that I have collected Animals (including humans) I know that humans are a type of animal and that all animals create offspring. I can describe the basic needs of animals, including that humans need water, food and air. I can explain why exercise, diet and hygiene are important for a human to grow healthily. Plants I know that plants grow from seeds or bulbs into mature plants. I can explain how to grow a healthy plant using suitable amounts of water, light and temperature. I understand that the amount of air, water, nutrients from soil and light plants need to grow healthy can vary depending on the type of plant. Living things and their habitats I understand that animals who eat other animals are called predators and that predators eat prey. I can begin to explain how animals and plants living in the same habitat are part of a food chain. Materials I can discuss how some material properties are more suited to a purpose than others. I know that a 'solid' is a material which holds its own shape when not in a container. I can investigate how some solids can change their shape by twisting, bending, squashing and stretching.	Working Scientifically **Questioning** - I can ask relevant questions linked to the science we are learning **Planning** - I can suggest a scientific way of answering questions **Observing** - I can make careful observations and take accurate measurements using standard units I can use a range of equipment provided for me **Recording** - I can record findings using simple scientific language I can gather, record, classify and present data in a variety of ways **Concluding** - I can use results to draw simple conclusions and make predictions for new values **Evaluating** - I can suggest how an investigation could be extended Animals (including humans) I understand animals cannot produce their own food so need nutrition from what they eat. I know that humans and most animals have skeletons to support their body shapes. I can explain how muscles contract and release to cause movement and work in pairs. Plants I can describe the functions of the different parts of a flowering plant (roots, stem/trunk, leaves and flowers). I can explain how water is transported within plants through their roots and stem system. I know that the flower plays an important role in the lifecycle of a plant as it is the source of pollination or seed dispersal. Forces I can describe the effects of the two poles of a magnet using the words attract and repel. I can investigate how some magnets attract other materials. These materials are classified as 'magnetic'. I can describe why magnets can force magnetic objects to move without touching them. Light I can explain why the Sun is a powerful light source which should never be looked at directly. I understand that we need light in order to see. I can investigate how shadows are formed when light is blocked by an opaque object.

		Materials I can group and classify rocks by their appearance and properties. I can examine that soil is made from organic materials and eroded rock. I can research how a fossil is formed, representing this as a model.

Year 4	Year 5	Year 6
Working Scientifically **Questioning** - I can ask relevant questions linked to the science we are learning **Planning** - I can use different types of scientific enquiries **Observing** - I can make systematic observations using a range of equipment, such as thermometers and data loggers **Recording** - I can use different ways to record, group and display evidence **Concluding** - I can report on findings, including oral and written explanations, displays or presentations of results and conclusions **Evaluating** - I can use results to suggest improvements to enquiries and to raise questions Animals (including humans) I can describe how the digestive system breaks down food to release nutrients to the body. I can name and describe the function of the three types of human teeth. I understand that animals survive by feeding on other animals and plants, which can be represented in a food chain as: predators, prey and producers. Living things and their habitats I understand that living things can be grouped in different ways according to the type of animal they are. I can use a classification key to help identify animals living in a habitat. I can discuss how changes to a habitat can pose danger to living things. Forces I can break down a simple circuit into basic parts: cell, wires, bulbs, switches and buzzers. I can explain why a circuit must be complete in order for it to work but a switch can be used to control this. I can investigate which materials can be grouped as conductors or insulators to be used to either aid or prevent the circuit from working. Sound I can describe how sounds are made by something vibrating. I can describe the way the vibrations travel from the object to the ear, where they become a sound. I can investigate how sounds can be made to sound different: pitch, volume and distance. Materials I can describe how all materials can be grouped together as solid, liquid or gas.	Working Scientifically **Questioning** - I can ask relevant questions linked to the science we are learning I can begin to use my prior scientific knowledge to justify the questions that I have asked. **Planning** - I can plan enquiries as part of a team I can begin to recognise different variables **Observing** - I can take measurements using a range of equipment with precision taking repeated reading when appropriate **Recording** - I can record data and results using scientific diagrams and labels, classification keys, tables, bar and line graphs **Concluding** - I can report and present findings including conclusions and causal relationships in oral and written forms **Evaluating** - I can show how evidence supports a conclusion I can discuss, with support, why some results may not be entirely trustworthy Animals (including humans) I know the human body goes through many changes in its lifetime, including puberty. Living things and their habitats I know that all living things reproduce but that this process is different in plants and animals. I can describe the different ways that living things begin their lives, including: mammals as live young, amphibians as eggs, insects as larvae and birds as eggs. Forces I know that objects fall to Earth because of the force of gravity acting on the object. I can investigate how moving objects can be slowed down using resistance from water, air and friction between the object and the surface. I can describe how levers, pulleys and gears can be used to reduce the amount of force needed to move an object. Earth and Space I can explain how the Moon orbits around the Earth, which creates day and night. I can explain how the Earth (and other planets) orbits around the Sun, causing seasons and years. I can research the eight planets of our solar system, which all orbit the Sun. Materials	Working Scientifically **Questioning** - I can ask sophisticated questions linked to the science we are learning I can use my prior scientific knowledge to justify the questions that I have asked. **Planning** - I can plan more sophisticated scientific enquiries. I can risk assess my own enquiries I can recognise different variables I can suggest different ways to take measurements and collect data **Observing** - I can discuss the reliability of my observations **Recording** - I can record data and results using scientific diagrams and labels, classification keys, tables, bar, line and scatter graphs of increasing complexity **Concluding** - I can write conclusions using evidence and identifying causal links with increasing independence **Evaluating** - I can discuss why some results may not be entirely trustworthy I can identify scientific evidence to support/ refute ideas or arguments Animals (including humans) I can explain how the heart, blood vessels and lungs work together to form the circulatory system. I know that oxygenated blood feeds the organs of the body. I can discuss how lifestyle choices such as diet, exercise and drugs can affect the function of the circulatory system. Living things and their habitats I can describe how living things are classified into groups through recognisable characteristics. I understand that animals, plants and microorganisms are all types of living things. I can explain how shared characteristics are the reason for each living thing's classification. Evolution and Adaptation I know that living things produce offspring which share the characteristics of the parents but are not identical to them. I can suggest reasons why animals and plants adapt to suit their environment, which over time leads to evolution. I can explain how living things have changed over time (using fossils as a source of evidence). Forces I can represent and follow electrical circuits using simple diagrams.

I can investigate how changes in temperature can cause materials to change state. I can research the evaporation and condensation of water to explain the water cycle.	I can dissolve materials in a liquid to form a solution, discussing how it can often be reversed. I can separate mixtures of solids, liquids and gases in different ways: filtering, sieving and evaporation. I can describe how irreversible changes can occur, when mixing different materials or by applying heat to a mixture.	I know why the power of a cell or battery (group of cells) is measured as voltage in a circuit. (Scientist research) I can investigate how the voltage in a circuit can cause variations in how a component functions. Light I can prove that light travels in straight lines. I can explain why shadows have the same shape as the object because the light cannot bend around it. I understand that we see things because the light travels from the source to the object and then to our eyes.

Year Group Science Overview

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	**Working Scientifically**	**Working Scientifically**	**Working Scientifically**	**Working Scientifically**	**Working Scientifically**
	Living things and their habitats Living and dead, describe habitats, basic food chains		Living things and their habitats Grouping living things, use classification keys. Change in environment can threaten life.	Living things and their habitats Animals - different life cycles, reproduction in plants and animals.	Living things and their habitats Classification including microorganisms, plants and animals
Plants Name basic parts Identify common plants	Plants Seed/bulb grow into plants What plants need	Plants Function - including how water is transported Life cycle of plants			
Animals, including humans Name common animals Name carnivores, herbivores, omnivores	Animals, including humans Animals offspring, basic needs for survival. Importance of exercise, food hygiene.	Animals, including humans Need for the right amount of nutrition. Skeletons and muscles	Animals, including humans Basic function of digestive system. Teeth. Food chains	Animals, including humans How humans change with age	Animals, including humans Human circulatory system. Exercise, drugs and lifestyle.
Seasonal Changes Observe weather and changes across seasons. Revisit in every term		Light Need for light to see How shadows are formed - size	Sound How sound is made, travels. Pitch and volume.	Earth and Space Movement of Earth, planets and Moon. Night and day.	Light Travels in straight lines. How light enables us to see. How shadows are formed - shape
		Forces and magnets Compare different surfaces. Magnets	Electricity Simple circuits, switches. Conductors and insulators.	Forces Gravity, air/water resistance, friction. Levers, pulleys and gears.	Electricity Brightness of lamp, volume of buzzer. Symbols of circuit diagrams

Everyday materials Name. Describe and sort everyday materials.	Uses of everyday materials Uses of materials. Changing shape of materials	Rocks Group different rocks, how they are formed. Fossils	States of matter Solids, liquids, gases. Change state, evaporation, condensation.	Properties and changes of materials Dissolve, separating, reversible changes. Change that produce new materials.	Evolution and inheritance Fossils Offspring different to parents Animal adaptation - evolution