

Working Scientifically	Vocabulary	Pupils Might Work Scientifically by:
<b>EYFS</b>	Compare, Describe, Different Differences Similarities	<a href="https://pstt.org.uk/resources/curriculum-materials/eyfs-science">https://pstt.org.uk/resources/curriculum-materials/eyfs-science</a> Link to CoEL
<b>Y1 Ongoing SC1/4.1</b>	Questions, Answers, Equipment, Results, Sort, Explore, Observe, timers, Ruler, Tape measure, Metre stick, Beaker, Collect, Measure, Record, Group, Test,	<p><b>Sc1/2.1 Plants</b>            Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.</p> <p><b>sc1/3.1 Everyday materials</b>            Pupils might work scientifically by: performing simple tests to explore questions, for example: ‘What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast’s leotard?’</p> <p><b>Sc1/2.2 Animals including Humans</b>            Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.</p> <p><b>Seasonal Changes</b>            Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.</p>
<b>Y2</b>	Predict, Fair test, Data, Contrast, Diagram	<p><b>Sc2/3.1 Properties of Everyday Materials</b>            Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.</p> <p><b>Sc2/2.3 Animals including Humans</b>            Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.</p> <p><b>Sc2/2.1 Living things and their habitats</b></p>

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		<p>Pupils might work scientifically by: sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. They could construct a simple food chain that includes humans (e.g. grass, cow, human). They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.</p> <p>Sc2/2.2 Plants Pupils might work scientifically by: observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.</p>
Y3	<p>Research relevant questions, accurate, oral conclusion, evidence, drawings, labelled diagrams, keys, bar charts, tables</p>	<p>Sc3/3.1 Rocks Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.</p> <p>Sc3/4.2 Forces and Magnets Pupils might work scientifically by: comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.</p> <p>Sc3/2.1 Plants Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.</p> <p>Sc3/2.2 Animals including humans</p>

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		<p>Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.</p> <p>Sc3/4.1 Light Pupils might work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</p>
<b>Y4</b>	<p>scientific enquiry, systematic, comparative, observation, written conclusion, data-gather, data logger, construct, interpret, classify, secondary sources</p>	<p>Sc4/3.1 States of matter Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line and investigate the effect of temperature on washing drying or snowmen melting. Note: Teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning.</p> <p>Sc4/2.2 Animals including Humans Pupils might work scientifically by: comparing the teeth of carnivores and herbivores and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.</p> <p>Sc4/4.1 Sound Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.</p> <p>Sc4/4.2 Electricity Pupils might work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can, and some cannot be used to connect across a gap in a circuit.</p> <p>Sc4/2.1 Living Things and their Habitats</p>

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		<p>Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.</p>
Y5	variables, precision, classification keys, tables, scatter graphs, bar graph, line graph, further comparative and fair tests, report, patterns	<p><b>Sc5/2.1 Living things and their habitats</b>            Pupils might work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.</p> <p><b>Sc5/ 4.2 Forces</b>            Pupils might work scientifically by: exploring falling paper cones or cup-cake cases and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.</p> <p><b>Sc5/4.1 Earth and Space</b>            Pupils might work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.</p> <p><b>Sc5/2.2 Animals including Humans</b>            Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p> <p><b>Sc5/3.1 Properties and Changes of Materials</b>            Pupils might work scientifically by: carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.</p>

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<b>Y6</b>	casual relationships, degree of trust, systematic, quantitative,	<p> <b>Sc6/4.1 Light</b>            Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).         </p> <p> <b>Sc6/4.2 Electricity</b>            Pupils might work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.         </p> <p> <b>Sc6/2.3 Evolution</b>            Pupils might work scientifically by: observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.         </p> <p> <b>Sc6/2.1 Living Things and their Habitats</b>            Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.         </p> <p> <b>Sc6/2.2 Animals including Humans</b>            Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.         </p>