

SCIENCE CURRICULUM OVERVIEW LINKED TO NATIONAL CURRICULUM.

Year 5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Living things and their Habitats	Animals Including Humans	Properties of materials	Earth and Space	Earth and Space	Forces
<p>Working Scientifically uks2w1: planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary uks2w2: taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate uks2w3: recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs uks2w4: using test results to make predictions to set up further comparative and fair tests uks2w5: reporting and presenting 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 uks2w6: identifying scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Children learn about the life cycles of 3 different amphibians - frogs, salamanders and axolotls. They create 3 life cycle diagrams, adding their own explanations and diagrams or cutting and pasting those provided. They compare the life cycles of these amphibians.</p>	<p>Children complete a table showing the gestation periods of 10 different mammals. They round each gestation period to the nearest 10 days and use this to create a bar chart. They look for patterns and identify which mammal has the longest gestation period.</p>	<p>Children learn that solutions cannot be separated by filtering because the particles have spread out and are not in clumps that can be blocked by a sieve. Children investigate the best place to put a cup of salt solution so that the water evaporates most quickly. They choose 4 locations and measure the amount of water in each container over the course of 7 days. They transfer their results to a line graph and use this to answer the question.</p>	<p>Children learn about 3 different planet classifications - terrestrial, gas giant, and ice giant. They carry out a networking activity where each child has a sheet containing incomplete information and they find out the missing data from their classmates. They discuss various ways of comparing, grouping and ordering the planets.</p>		<p>Children learn that a lever is a simple machine that can give a mechanical advantage. Children set up their own lever, with fulcrum, beam and load, and investigate how far from the fulcrum different forces (weights) need to be in order to balance the load. They transfer their results to a line graph and attempt to find a relationship between the force required and the distance from the fulcrum.</p>
	<p>Children learn about the life cycles of 3 different mammals - the human, the kangaroo, and the platypus. They create a life cycle diagram for each mammal, writing their own descriptions and either cutting and pasting pictures or drawing their own. They discuss similarities and differences between the life cycles of these mammals.</p>	<p>Children learn that a human baby takes 40 weeks to develop in the womb. They complete a table by rounding the weight of an embryo/foetus at various stages of gestation to the nearest 100g. They use this information to complete a line graph. Children discuss at which point the foetus gained the most weight.</p>	<p>Children investigate the properties of 10 different materials. They predict and then investigate whether the materials are electrical conductors, transparent, strong thermal conductors or magnetic. They record their results in a table, and then complete a Venn diagram containing 2 intersecting sets, choosing 2 properties by which to group the materials.</p>	<p>Children learn that ancient astronomers developed the geocentric model because it was the best explanation available at the time. They learn that the heliocentric model superseded it for scientific reasons - because it agrees more closely with observations. Children cut out pictures of the Sun and the eight major planets of the solar system and use them to complete a diagram by placing them in order of distance from the Sun.</p>		<p>Children learn that objects fall to the Earth due to the force of gravity. They explore why people don't fall off the 'bottom' of the Earth, and why the Moon does not fall out of the sky. Children investigate the force of gravity by weighing 5 objects in grams, and then measuring the pull between them and the Earth using a force meter, measuring the force in newtons (N). They look for a relationship between their two measurements.</p>
	<p>Children learn about the lifecycle of the butterfly and two different species of bee - the honey bee and the mason bee. They create 3 life cycle diagrams, one for each insect, and compare them.</p>	<p>Children create a timeline showing the ages at which a certain child could perform different activities. They draw illustrations for each activity.</p>	<p>Children learn that when a solute dissolves in a solvent to create a solution, its particles spread out so that they can no longer be seen or retrieved by filtering. They investigate whether sand, sugar, salt, flour or iron filings will dissolve in water. They record their results in a table and then display them in a single-set</p>	<p>Children learn how the Moon moves around the Earth. They learn about theories of the Moon's formation, and that it has been explored. Children create an information text answering the questions 'How do the Earth and Moon move?', 'How was the Moon formed?', and 'Has the Moon been explored?'</p>		<p>Children create their own force meter using simple classroom equipment. They use known masses to calibrate their force meter, adding a sensible scale. Children learn that a mass of 100g experiences a pull towards the Earth due to the force of gravity of approximately 1 newton. Children explain how their</p>

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			Venn diagram. They consider how they could separate the mixtures and solutions.	and complete a diagram showing the movement of the Earth and Moon.		force meter works and why they needed to calibrate it before using it.
<p>Knowledge and Understanding Statutory requirement 5a1: describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird 5a2: describe the life process of reproduction in some plants and animals. 5b1: describe the changes as humans develop to old age. 5c1: 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 5c2: know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution 5c3: use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating 5c4: give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic 5c5: demonstrate that dissolving, mixing and changes of state are reversible changes 5c6: explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible,</p>	<p>Children learn about the life cycles of the chicken and the common cuckoo. They create two life cycle diagrams, describing each stage in their own words, and compare them.</p>	<p>Children think about how children develop physically, mentally and emotionally as they get older. With a partner, they discuss the age at which a child should be permitted to perform simple activities independently, such as riding a bike on the road and walking to school alone. They place them in order of age required, and give reasons for their judgments.</p>	<p>Children investigate whether 5 different materials can be scratched by 4 different objects of increasing hardness. They use their results to place the materials in order of hardness.</p>	<p>Children learn that the Moon is not a light source and that we can see it only because it reflects light from the Sun. They learn that the appearance of the Moon changes because of the movement of the Moon around the Earth. Children complete a diagram showing the eight phases of the Moon and why the Moon's appearance seems to change.</p>		<p>Children learn that air resistance can be put to use in devices such as parachutes. They investigate how canopy size affect's a parachute's rate of descent. They construct 4 parachutes with different canopy areas and predict and then measure how long they take to descend from a given height. They take each measurement 3 times and calculate the mean. Children show their results in a bar chart and attempt to answer the scientific question.</p>
	<p>Through a 2-player game, children explore different ways of sorting animals according to their life cycles. Using 9 challenge cards containing descriptions such as 'undergo metamorphosis' and 'are eusocial', children sort 10 different animals. They discuss which grouping was most difficult and attempt to create their own challenge cards.</p>	<p>Children learn that puberty is the period when a child begins to change into an adult. They explore a range of male and female body and mind changes. Children complete 2 diagrams, one for each gender, explaining some of the changes involved with puberty.</p>	<p>Children learn about 6 different methods for separating solutions - picking out by hand, decanting, sieving, filtering, using a magnet, and evaporation. They consider 6 different mixtures / solutions and discuss the best way to separate each. They attempt to separate them using their chosen method. They discuss whether their method worked and why.</p>	<p>Children learn about the modern theory for the formation of the solar system. They learn that a cloud of gas and dust collapsed under its own gravity, compressing the centre until thermonuclear fusion began and the Sun was formed. Children learn that the planets and other bodies accreted from smaller objects over time because of gravity. Children complete an information text explaining the origins of the solar system.</p>		<p>Children learn that water resistance is a force which prevents an object from moving easily through water. They learn that both high and low water resistance can be desirable in different situations. Children look at 6 different situations, identify whether the object is experiencing high or low water resistance, and why.</p>
	<p>Children learn about the purpose of a flower and its basic structures, including petal, anther, sepal, carpel, stigma, style, ovary, pollen grain, pollen tube and ovule. They label a diagram of a flower and carpel and complete an explanation text showing how flowering plants reproduce.</p>	<p>Children complete a diagram, explaining some body features which are exclusive to adult men, some body features which are exclusive to adult women, and body features which are common to both adult men and adult women.</p>	<p>Children identify the materials that 4 different objects are made from and explain why they have been chosen with reference to their physical properties. Next, they describe the physical properties and uses of 6 different materials - metals, plastics, wood, fabrics, glass and leather. They cut and paste or write their own descriptions.</p>			<p>Children learn that friction is a force that prevents objects from sliding past each other easily when they are in contact with each other. Children investigate the best surface to place on a floor to prevent people from slipping. They predict and then measure the force required to make a shoe containing a weight slide across a range of surfaces. They present their results in</p>

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<p>including changes associated with burning and the action of acid on bicarbonate of soda.</p> <p>5d1: describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>5d2: describe the movement of the Moon relative to the Earth</p> <p>5d3: describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>5d4: use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>5e1: explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>5e2: identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>5e3: recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>Children learn that, unlike animals, pieces broken off from plants can grow into another individual organism. They learn that this is used by farmers to create many crops with identical characteristics (such as planting potato tubers). By cutting up a plant such as a potato or tomato plant, children investigate which parts will grow into a new individual.</p> <p>Children learn that animals reproduce sexually and each individual has a male and a female parent from which they inherit various traits. Children explain the process of animal reproduction, including the stages of sperm and egg production, mating, fertilisation, and the growth of a zygote into an embryo.</p>	<p>Children learn about some of the difficulties involved with old age, as people's minds and bodies get more frail. Children give advice to 4 different old people and advise them on how they can improve their lives. They consider ways in which they can help older people in their own families and communities.</p> <p>Children consider the changes which take place during the course of a human life. They create a timeline with 8 different stages (embryo, foetus, new-born, child, adolescent, young adult, middle-aged adult and old adult) and draw their own illustrations.</p>	<p>Children learn about the origins of Post-It Notes, wrinkle-free cotton, polar fleece and Gore-Tex. They complete an information text, showing when and by whom they were invented, their advantages and disadvantages, and common applications.</p> <p>Children learn that some physical changes are readily reversible (such as freezing and melting), while some are not (such as burning, because new substances have been produced). They examine 11 different physical changes of materials. They identify whether they can be easily reversed and explain how or why.</p>	<p>Children learn that day and night are caused by the rotation of the Earth, and that the Sun only appears to move across the sky. Using a split pin, children create a moving model showing how the rotation of the Earth causes day and night. They move their model through a day and night cycle, using speech bubbles to explain what they would experience at each stage of the cycle.</p> <p>Using a template, children cut out and assemble their own sundial. They carefully attach the gnomon (shadow caster). On a sunny, rain and wind-free day, children calibrate their sundial by fixing it in position and marking where the shadow of the gnomon falls at 9am, 10am, 11am, 12pm, 1pm, 2pm and 3pm. Children predict where the 4pm shadow line would fall.</p>		<p>a bar chart and attempt to answer the scientific question.</p> <p>Children learn that a pulley is a simple machine that can be used to change the direction of a force, and can also be used to reduce the force required to lift a load. Children construct a simple pulley from 2 karabiner clips. They use a force meter to compare the force required to lift loads with and without the pulley. They record their results in a table and then transfer their results to a line graph showing two lines. They compare both sets of results and explain the advantage that a pulley provides.</p> <p>Children learn that a gear is a toothed wheel. They learn that gears can work together as a gear train in order to change the speed or direction of rotation. Children look at 8 different examples of gear trains. They work out whether the driven gear will rotate clockwise or anticlockwise and whether it will rotate more quickly or slowly than the driver. If possible, they use Lego gears to test their ideas.</p>
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