


# Cycle A Science Year 5/6

	Topic	Curriculum Links	Aims/Activity	National Curriculum Skills	Pupil Knowledge	Vocab
Autumn 2	Food Glorious Food	Geography DT	Pupils will answer the following key questions: <ul style="list-style-type: none"> <li>• What happens if we mix different solids together? Can you get it back?</li> <li>• What happens if we mix solids and liquids together? Does it dissolve?</li> <li>• How can I separate them? (undissolved / insoluble solids from liquids?) Can you change it back again?</li> <li>• Can I make it dissolve more quickly?</li> <li>• Can we always get back what we started with?</li> <li>• What happens when we mix different things?</li> <li>• What happens when we burn things?</li> <li>• What happens when we cook things?</li> <li>• Why do some things rust?</li> </ul>	Pupils will work scientifically by: <ul style="list-style-type: none"> <li>• observing and comparing the changes that take place.</li> <li>• observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes.</li> <li>• researching and discussing how chemical changes have an impact on our lives, for example cooking.</li> <li>• discussing [researching] the creative use of new materials such as polymers, super-sticky and super-thin materials.</li> </ul>	I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can demonstrate that dissolving, mixing and changes of state are reversible changes. I know that changes can occur when different materials are mixed. I know that some material changes can be reversed and some cannot. I recognise that dissolving is a reversible change. I can distinguish between melting and dissolving. I know that mixtures of solids (of different particle size) can be separated by sieving. I know that mixtures of solids and liquids can be separated by filtering if the solid is insoluble (undissolved). I know that evaporation helps us separate soluble materials from water. I know that changes to materials can happen at different rates (factors affecting dissolving, factors affecting evaporation – amount of liquid, temperature, wind speed). I know that freezing, melting and boiling changes can be reversed. I can explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, and the action of acid on bicarbonate of soda.	Dissolved, undissolved, solution, mixture, filter, sieve, evaporate, condense, melting, separate, reversible, irreversible, reaction, product, material, powder, substance, acid, change, burning, rusting.  Words and phrases related to data handling e.g. bar line graph, line graph, average, accurate.

Spring 1	Amazon Adventure	Geography DT Art	<p>Pupils will answer the following key questions:</p> <ul style="list-style-type: none"> <li>• How do plants and animals change over time?</li> <li>• What are baby animals like? How are they different in different species?</li> <li>• What is a life cycle?</li> <li>• How do animal life cycles differ?</li> <li>• Who are David Attenborough and/or Jane Goodall and what did they do or study?</li> <li>• How do plants make new plants?</li> <li>• What changes does a plant go through during its life cycle?</li> <li>• What features does a plant have to aid reproduction?</li> <li>• Can you identify plant features and describe them?</li> <li>• Are all plants the same? Do they all reproduce in the same way?</li> <li>• What is the job of the different reproductive parts of a plant?</li> <li>• Is a tomato really a fruit or a vegetable?</li> <li>• Do all plants reproduce by seed?</li> <li>• What if plants only produced one seed?</li> <li>• How do you take a cutting to successfully grow a new plant?</li> <li>• What if all plants died out?</li> </ul>	<p>Pupils will work scientifically by:</p> <ul style="list-style-type: none"> <li>• 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).</li> <li>• By asking pertinent questions.</li> <li>• By suggesting reasons for similarities and differences.</li> <li>• By trying to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs.</li> <li>• By observing changes in an animal over a period of time (for example, by hatching and rearing chicks).</li> <li>• By comparing how different animals reproduce and grow.</li> </ul>	<p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>I can describe the life process of reproduction in some plants and animals.</p> <p>I know that plants produce pollen from the stamen (male part of a plant) which is transferred to the stigma and then the ovary (female parts of the plant).</p> <p>I know that fertilisation occurs in the ovary of the flower.</p> <p>I know that seeds are formed as a result of fertilisation.</p>	<p>Mammals, amphibians, reptiles and plants.</p> <p>Live young/eggs, gestation/ incubation period, grow, metamorphosis, parental care/no parental care.</p> <p>Flowering and non-flowering plants, classifying, classification.</p> <p>Reproduction/ reproduce, fertilisation/ fertilise, germination /germinate, pollination/ pollinate.</p> <p>Stamen, style, stigma, sepal, petal, ovary, pollen.</p> <p>Adapted, adaptations, suited to its environment / habitat.</p> <p>Similarities and differences, compare and contrast, research.</p>
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Spring 2	Faster, Higher, Stronger	History Art Music (Link to PSHE- changes in puberty)	<p>Pupils will answer the following key questions:</p> <ul style="list-style-type: none"> <li>How do humans change as they grow older?</li> <li>How do we know that animals are alive? What are the features that make them living?</li> </ul>	<p>Pupils will work scientifically by:</p> <ul style="list-style-type: none"> <li>researching the gestation periods other animals and comparing them with humans.</li> <li>finding out and recording the length and mass of a baby as it grows.</li> </ul>	<p>I can describe the changes as humans develop to old age.</p> <p>I know that animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.</p>	<p>Vocab linked to growth, change, human body,</p> <p>Living, move, feed, grow, senses, reproduce, breathe, respire, excrete.</p>
Summer 1	Earthlings	Music Art	<p>Pupils will answer the following key questions:</p> <ul style="list-style-type: none"> <li>What do we know about the Earth, Sun and Moon?</li> <li>How do the Earth, Sun and Moon fit within our solar system?</li> <li>How do we get day and night?</li> <li>What do we know about the shape and movement of the Earth?</li> <li>Why does the Moon appear to change shape?</li> <li>How do shadows, created by the Sun, change during a day?</li> <li>How were shadows used in the past to help people tell the time?</li> </ul>	<p>Pupils will work scientifically by:</p> <ul style="list-style-type: none"> <li>comparing the time of day at different places on the Earth through internet links and direct communication.</li> <li>creating simple models of the solar system.</li> <li>constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day.</li> <li>finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks [research].</li> </ul>	<p>I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>I can describe the movement of the Moon relative to the Earth.</p> <p>I can describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>I can use the idea of the Earth's rotation to explain day and night.</p> <p>I know that:</p> <ul style="list-style-type: none"> <li>The Earth spins once around its own axis in 24 hours, giving day and night.</li> <li>The Earth orbits the Sun in one year.</li> <li>We can see the Moon because the Sun's light reflects off it.</li> <li>The Moon orbits the Earth in approximately 28 days and changes to the appearance of the Moon are evidence of this.</li> <li>The Sun <i>appears</i> to move across the sky from East to West and this causes shadows to change during the day.</li> <li>Changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth.</li> </ul>	<p>Sphere/spherical, revolve, orbit, spin, rotate, axis, sunrise, sunset, north, south, east, west, rotate around, rotate on its axis.</p> <p>Solar System, Sun, Moon, star, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, planet, conditions, features.</p> <p>Sundial, shadow clock, time, time zones.</p> <p>Model, compare, evidence.</p>

Summer 2	Inventors and Inventions	History DT	<p>Pupils will answer the following key questions:</p> <p>(Friction, air resistance, water resistance, gravity)</p> <ul style="list-style-type: none"> <li>• What is friction?</li> <li>• When is friction useful?</li> <li>• When is friction a disadvantage?</li> <li>• What if there was no friction?</li> <li>• How can objects be moved more easily? i.e. reduce the friction (rollers, lubricants, shiny surfaces, wet surfaces)</li> <li>• How can we slow down a moving object?</li> <li>• How can you slow down the movement of an object through the air?</li> <li>• Why does everything fall to the ground when thrown in the air?</li> <li>• How can you measure a force?</li> <li>• (Forces)</li> <li>• How can we make a small force have a big effect?</li> <li>• How do forces affect the movement?</li> <li>• What are levers and why are they useful?</li> <li>• What are pulleys and why are they useful?</li> <li>• How are gears useful?</li> <li>• What is a simple machine?</li> <li>• Can more than one force be acting?</li> <li>• Which is the largest force in each situation?</li> </ul>	<p>Pupils will work scientifically by:</p> <ul style="list-style-type: none"> <li>• exploring falling paper cones or cup-cake cases.</li> <li>• designing and making [exploring] a variety of parachutes.</li> <li>• carrying out fair tests to determine which designs are the most effective.</li> <li>• exploring resistance in water by making and testing boats of different shapes.</li> <li>• designing and making [creating/inventing/designing] artefacts that use simple levers, pulleys, gears and/or springs and explore their effects.</li> </ul>	<p>I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>I can identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>I know that friction, air resistance and water resistance are forces which slow down moving objects.</p> <p>I recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>I know there are different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity).</p> <p>I know that gravity can act without direct contact between the Earth and an object.</p> <p>I know that friction, air resistance and water resistance can be useful or unwanted.</p> <p>I know the effects of friction, air resistance and water resistance can be reduced or increased for a preferred effect.</p> <p>I know that more than one force can act on an object simultaneously (either reinforcing or opposing each other).</p>	<p>Friction, air resistance, water resistance, force-meter, Newtons, surface area, gravity, movement, between surfaces</p> <p>Lots of friction: gripping, stuck, don't slide or move easily, lots of surfaces touching, not slipping, like they are glued together.</p> <p>Not much friction: slippery, sliding over each other, hard to grip onto, liquids stopping the surfaces touching each other easily).</p>
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Standalone Unit	<b>Material Properties</b> (comparative/ fair tests of everyday materials)	DT	Pupils will answer the following key questions: <ul style="list-style-type: none"> <li>• What materials do we use / need for...? Why?</li> <li>• How can we sort materials?</li> <li>• What are its properties?</li> <li>• Why is it useful?</li> <li>• Is this the best material for the job?</li> <li>• Can light travel through things?</li> <li>• How can we keep things warm?</li> <li>• How can we keep things cold?</li> <li>• What is the best insulation material?</li> <li>• What happens to the temperature</li> <li>• How are insulating materials used in everyday products?</li> </ul>	Pupils will work scientifically by: <ul style="list-style-type: none"> <li>• carrying out tests to answer questions such as '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?'</li> <li>• comparing materials in order to make a switch in a circuit.</li> </ul>	<p>I can 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> <p>I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic (advantages and disadvantages).</p> <p>I can compare a variety of materials and measure their effectiveness (e.g. hardness, strength, flexibility, solubility, transparency, thermal conductivity, electrical conductivity).</p> <p>I know that in temperature and thermal insulation:</p> <ul style="list-style-type: none"> <li>– Heat always moves from hot to cold.</li> <li>– Some materials (insulators) are better at slowing down the movement of heat than others.</li> <li>– Objects/liquids will warm up or cool down until they reach the temperature of their surroundings.</li> </ul>	<p>Words describing the characteristics of materials e.g. strong, hard, flexible, absorbent, transparent, etc. PLUS thermal conductor, thermal insulator, thermal conductivity.</p> <p>Words and phrases related to warmth and cold e.g. temperature, thermometer, degrees Celsius.</p> <p>Words related to the investigation of these properties e.g. investigate, test, describe, explain, comparison, fair, conclude, evidence, comparison / compare, description / describe.</p> <p>Words which have different meanings in other contexts e.g. test, fair, conclude.</p>
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