

Subject: Science Year: 5

What are the aims and intentions:

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

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Scientific skills:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording 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
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

Links to prior knowledge

Previous years topic development-

- Animals including humans
- Living things and habitats

Term:	Topic:	Knowledge	Skills:	Key Questions
Autumn 1	Out of This World- Earth and Space	<ul style="list-style-type: none"><li>• describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li><li>• describe the movement of the Moon relative to the Earth</li><li>• describe the Sun, Earth and Moon as approximately spherical bodies</li><li>• use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky.</li></ul>	<p>To identify scientific evidence to support or refute ideas</p> <p>To explore theories of planetary movement in the solar system using evidence</p> <p>To conclude using findings</p>	<ul style="list-style-type: none"><li>• Can you explain how we know the Sun, Earth and Moon are spherical?</li><li>• Can you name and describe features of the planets in our solar system.</li><li>• Can you order the planets?</li><li>• Can you explain how planets move in our solar system?</li><li>• Can you explain day and night and the movement of the sun across the sky?</li><li>• Can you explain the movement of the Moon?</li></ul>

Key Vocabulary: Earth, sun, moon, space, planets, stars, solar system, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, rotate, day, night, Aristotle, Ptolemy, Galileo, Copernicus, Brahe, Alhazen, orbit, axis, spherical, heliocentric, geocentric, hemisphere, season, tilt				
Cultural Capital: October- Space week Durham learning curriculum boxes: Space				
Autumn 2	Chim Chimney- Forces	<ul style="list-style-type: none"> <li>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul>	<p>To identify and explain</p> <p>To use evidence to conclude</p> <p>To set up a reliable and accurate investigation</p> <p>To identify depended, independent and controlled variables</p> <p>To make and record accurate observation</p> <p>To use results to make a generalisation and further predictions</p> <p>To be able to ask and answer questions based on their learning of scientific language</p>	<ul style="list-style-type: none"> <li>Can you identify the force acting on an object?</li> <li>Can you explain the effects gravity has on objects and how gravity was discovered?</li> <li>Can you explain the effect of water resistance?</li> <li>Can you explain the effects of friction?</li> <li>Can you name the mechanisms?</li> </ul>
Key Vocabulary: gravity, air resistance, water, resistance, friction, surface, force, effect, move, accelerate, decelerate, stop, change direction, brake, mechanism, pulley, gear, spring, theory of gravitation, Galileo Galelei, Isaac Newton				
Cultural Capital: Durham learning curriculum boxes: Forces November- Science day				
Spring 1	The Attenborough Effect- Scientist's and Inventors	<ul style="list-style-type: none"> <li>identifying scientific evidence that has been used to support or refute ideas or arguments</li> </ul>	<p>To research and present information</p> <p>To order facts</p> <p>To describe evidence that supports their own idea and theories</p> <p>To use their results to make new predictions</p> <p>To record their findings accurately and explain what they show</p> <p>To identify mixture by analysing its components</p>	<ul style="list-style-type: none"> <li>Can you describe the life and work of David Attenborough?</li> <li>Can you describe how Margaret Hamilton's work changed future space missions?</li> <li>Can you describe Eva Crane's work on bees and why bees are important to our world?</li> <li>Can you describe Stephanie Kwolek and her work with materials?</li> </ul>

				<ul style="list-style-type: none"> <li>•Can you explain how Leonardo Da Vinci's inventions improved life?</li> <li>•Can you identify some theories behind Stonehenge?</li> </ul>
Key Vocabulary: David Attenborough, wildlife, naturalist, chromatography, evidence, support, refute, Margaret Hamilton, Apollo, mission, astronaut, spacecraft, NASA, engineer, Eva Crane, bee , decline, honey, egg, larvae, pupa, materials, properties, hard, soft, light, heavy, dense, flexible, anatomy.				
Cultural Capital: Durham learning curriculum boxes: Inventors Careers workshop January- bird watching week, energy saving week February-penguin awareness day				
Spring 2	World War 2- Animals including humans	<ul style="list-style-type: none"> <li>• describe the changes as humans develop to old age.</li> </ul>	<p>To compare graph types and select which is most appropriate for their data</p> <p>To analyse and report finding in written explanations</p> <p>To give reasons why changes occur</p> <p>To analyse similarities and differences between how male and females experience puberty</p>	<ul style="list-style-type: none"> <li>•Can you describe the stages of human development?</li> <li>•Can you explain how babies grow and develop?</li> <li>•Can you describe and explain the main changes which occur during puberty?</li> <li>•Can you identify the changes that takes place in old age?</li> <li>•Can you explain the gestation period in animals?</li> <li>•Can identify how life expectancy in animals varies?</li> </ul>
Key Vocabulary: Puberty, life cycle, gestation, growth, reproduce, foetus, baby, fertilisation, toddler, child, teenager, adult, old age, life expectancy, adolescence, adulthood, early adulthood, middle adulthood, late adulthood, childhood				
Cultural Capital: March-science week April-Earth day Durham learning curriculum boxes: Animals including humans, animals				
Summer 1	It's a Jungle Out There- Living things and habitats	<ul style="list-style-type: none"> <li>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> </ul>	<p>Identify similarities and differences</p> <p>To describe the stages of reproduction</p> <p>To compare the stages of life cycles</p> <p>To classify different animals</p>	<ul style="list-style-type: none"> <li>•Can you describe how some plants reproduce?</li> <li>•Can you describe the life cycles of different mammals?</li> </ul>

		<ul style="list-style-type: none"> <li>describe the life process of reproduction in some plants and animals.</li> </ul>		<ul style="list-style-type: none"> <li>Can you explain what Jane Goodall discovered about chimpanzees?</li> <li>Can you compare life cycles of amphibians and insects?</li> <li>Can you compare life cycles of plants, mammals, amphibians, insects and birds?</li> </ul>
<p>Key Vocabulary: Life cycles, mammal, amphibian, insect, bird, life processes, plants, animals, vegetable garden, flower border, animal naturalists, animal behaviourists, reproduction, sexual, asexual, rainforest, oceans, deserts, prehistoric, similarities, differences</p>				
<p>Cultural Capital:          Explore habitats within the local community          Durham learning curriculum boxes: Living things and that habitats          April- Earth day          May-World bee day, world turtle day</p>				
Summer 2	Marvellous Mayans- Properties and change of materials	<ul style="list-style-type: none"> <li>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</li> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> </ul>	<p>To devise their own way to test a materials property          Explain with reasoning          To select and conduct the most appropriate experiment          To identify dependent, independent and controlled variables          To set up an accurate investigation          To make and explain predictions          To make and record accurate observations          To use scientific language to explain their findings          To use their results to make generalisations and further predictions</p>	<ul style="list-style-type: none"> <li>Can you compare materials according to their properties?</li> <li>Can you investigate thermal conductors and insulators?</li> <li>Can you explain which electrical conductors make a bulb shine the brightest?</li> <li>Can you explain which materials dissolve?</li> <li>Can you explain the process to separate mixtures of materials?</li> <li>Can you identify and explain irreversible chemical changes?</li> </ul>

		<ul style="list-style-type: none"> <li>• demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>• 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.</li> </ul>		
<p>Key Vocabulary: Properties, hardness, solubility, transparency, electrical conductor, thermal conductor, magnetic, dissolve, solution, separate, separating, solids, liquids, gases, evaporating, reversible changes, dissolving, mixing, evaporation, filtering, sieving, melting, irreversible, new material, burning, rusting, magnetism, electricity, chemists, quantitate, measurements, conductivity, insulation, chemical</p>				
<p>Cultural Capital:  Durham learning curriculum boxes: Properties of materials  June- World ocean day</p>				