



Caring for Everyone, Learning Together, Achievement for All

Science Programme for KS2

<u>Year A Autumn 1 Term</u>	<u>Year A Autumn 2 Term</u>	<u>Year A Spring 1 Term</u>
<p>Properties and changes of materials: Magnets</p> <p>i. compare how things move on different surfaces ii. notice that some forces need contact between two objects, but magnetic forces can act at a distance iii. observe how magnets attract or repel each other and attract some materials and not others iv. compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials v. describe magnets as having two poles vi. predict whether two magnets will attract or repel each other, depending on which poles are facing. Ask questions and then investigate how toy vehicles run on different surfaces. Begin to explain in terms of forces (exploring/ classifying and identifying) Investigate how it is forces that make things move (pushes and pulls) and that magnetic forces can move things at a distance without forces touching (exploring/ classifying and identifying). Investigate how magnets attract some materials and not others, Comparing and grouping materials (exploring/ predicting/classifying and identifying) Investigate the polarisation of magnets, making predictions and testing ideas (exploring/ predicting). Develop a game or activity that uses magnetic forces by trying out a variety of ideas (exploring) Test your knowledge of magnetic forces. Design a poster to explain the science behind your game</p>	<p>Properties and changes of materials</p> <p>v. Compare and group together everyday materials on the basis of their properties, including their solubility and response to magnets vi. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution vii. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating viii. Demonstrate that dissolving, mixing and changes of state are reversible changes ix. 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</p> <p>Compare properties of solids, liquids and gases (exploring) Investigate mixing materials (exploring) Investigate separating materials (exploring) Make new materials (exploring) Investigate irreversible changes (exploring) Present findings in the form of an education pack for the Science Museum (pattern seeking)</p> <p>Extended writing opportunity Information text: write a report of your methods and findings for the Science Museum.</p>	<p>Sound</p> <p>identify how sounds are made, associating some of them with something vibrating</p> <p>i) recognise that vibrations from sounds travel through a medium to the ear ii) find patterns between the pitch of a sound and features of the object that produced it iii) find patterns between the volume of a sound and the strength of the vibrations that produced it iv) recognise that sounds get fainter as the distance from the sound source increases</p> <p>Go on a 'sound walk' through the school and begin to think about how sound is made (exploring). Explore sound further and investigate vibrations and how sound travels (exploring, problem solving). Investigate pitch and volume by exploring instruments and the different sounds they make (exploring, pattern seeking). Understand how we hear sounds and begin to consider ways to reduce what we can hear (exploring, pattern seeking, problem solving). Plan and conduct an investigation into which material best reduces the sounds we hear (pattern seeking, fair testing, exploring over time, problem solving). Present your ear defenders design, and explain your findings (problem solving).</p>

<p>or activity stage it in an attractive eye catching way (analysing secondary sources) Extended writing Recount: Write a letter to Mr Andrew Newton of the British Scientific Society to tell him about your initial investigation into the forces needed to move a toy vehicle on different surfaces. Non-chron reports: Write an information leaflet for younger children about the Magic of Magnets. Explanations: Write questions and explanations about magnetic forces for the visitors to your science fair.</p>	<p>Biography: Research key information about some chemists who have invented very useful new materials and write short biographies for a class hall of fame. Argument and debate: Take part in a balloon debate and argue why your particular materials chemist should survive the trip.</p>	<p>Extended writing opportunity Explanation text: Make a picture book summarising what you have found out about sound, how to vary the pitch of a sound and the pattern between the pitch and volume of a sound. Persuasive writing: Write an advertising leaflet with diagrams describing why your ear defender design is the best.</p>
<p style="text-align: center;"><u>Year A Spring 2 Term</u></p> <p>Living things and their habitats</p> <p>i. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird ii. Describe the life process of reproduction in some plants and animals</p> <p>Observe and sketch insect and amphibian lifecycles for comparison (observing over time) Research and sketch mammalian and bird life cycles for comparison (analysing secondary sources) Compare the lifecycles of mammals, amphibians, insects and birds (pattern seeking) Research reproduction in plants and animals (analysing secondary sources/pattern seeking). Create computer animations that explain plant reproduction (analysing secondary sources) Create computer animations that explain animal reproduction (analysing secondary sources)</p> <p>Extended writing opportunity Chronological report: write up the life cycle of an insect, amphibian, mammal, bird or plant for a class information book. Biography: research a significant naturalist or animal behaviourist and create a poster that showcases their life, achievements and significance.</p>	<p style="text-align: center;"><u>Year A Summer 1 Term</u></p> <p>Living things and their habitats (Name that living thing)</p> <p>i) recognise that living things can be grouped in a variety of ways ii) explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Ask relevant questions about living things and their habitats and begin to group them (sorting, classifying and identifying).</p> <p>Observe local habitats and record living things they see around them (exploring, sorting, classifying and identifying).</p> <p>Create a branching database to sort and identify local invertebrates (sorting, classifying and identifying).</p> <p>Make close observational drawings and large-scale drawings; understand that tiny details of features help with classification (classifying and identifying).</p> <p>Write a branching database for a variety of living things in the wider environment (researching and analysing secondary sources, classifying and identifying).</p> <p>Extended writing opportunity</p>	<p style="text-align: center;"><u>Year A Summer 2 Term (Science of Sport)</u></p> <p>Living Things and their Habitats describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals Properties of Materials i. compare and group together everyday materials on the basis of their properties ii. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Forces i. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object ii. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces iii. recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect Animals including Humans i. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function ii. recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Electricity i. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit ii. compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches iii. use recognised symbols when representing a simple circuit in a diagram</p>

	<p>Non-chronological writing: Write a newspaper article, for the Nature column, about your observations during your trip within the local environment.</p> <p>Biography: Research some key facts about Carl Linnaeus and write a short biography about him explaining his importance.</p>	<p>Identify characteristics of grass and create their own classification key for given grasses (classification) Identify and compare the properties of sports top materials (fair testing/exploring/pattern seeking)</p> <p>Identify the forces that can impact on a sports game and suggest how friction, air resistance and gravity can be exploited in sports (fair testing/exploring/pattern seeking)</p> <p>Investigate the impact of exercise on the human body and the impact of nutrition on sports performance (fair testing/exploring/pattern seeking)</p> <p>Identify the influence of inheritance and environmental factors on sports performance (analysing secondary sources)</p> <p>Design and create circuits to ensure floodlights in a stadium are bright enough (fair testing/exploring/pattern seeking)</p> <p>Extended writing opportunity</p> <p>Persuasive writing: Complete research or investigations into the materials used for various sports balls or bats/rackets and clubs and write a sports company advertising leaflet extolling the virtues of the new equipment.</p> <p>Information text: Create a sports information leaflet about the factors that impact on sports talent.</p>
--	---	--

Working scientifically UKS2 Year 3 & 4:

- i) asking relevant questions and using different types of scientific enquiries to answer them
- ii) setting up simple practical enquiries, comparative and fair tests
- iii) making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, incl thermometers/data loggers
- iv) gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- v) recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- vi) reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- vii) using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- viii) identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings
- ix)

Working scientifically UKS2 Year 5 & 6:

- i Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- ii Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- iii Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- iv Using test results to make predictions to set up further comparative and fair tests
- v 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
- vi Identifying scientific evidence that has been used to support or refute ideas or arguments