**SCIENCE KS1-KS2 CURRICULUM COVERAGE AND PROGRESSION CHART**

| **Science : Working Scientifically** |
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|  | **KS1** | **Lower KS2** | **Upper KS2** |
| **End of Year 1, expected:** | **End of Year 2, expected:** | **End of Year 3, expected:** | **End of Year 4, expected:** | **End of Year 5, expected:** | **End of Year 6, expected:** |
| Planning Investigations | a) Pupils can ask Questions | Pupil can, with prompting, ask simple questions that can be tested, e.g. about plants growing in their habitat. | Pupil can ask simple questions that can be tested, e.g. about the local environment and how organisms depend on each other. | Pupil can, with support, develop relevant, testable questions, e.g. what happens to shadows when the light source moves. | Pupil can develop relevant, testable questions, e.g. based on observations of animals.  | N/A | N/A |
| b) Pupils can plan an enquiry | Pupil can offer ways of gathering evidence to answer a question, e.g. by deciding on the best material to use for a particular application. | Pupil can suggest different ways of answering a question, e.g. testing the suitability of materials for different purposes. | Pupil can plan enquiry, such as comparative or fair test, e.g. comparing the effect of different factors on plant growth. | Pupil can plan investigations using different types of scientific enquiry, e.g. exploring various materials by observing change over time, running comparative tests and conducting surveys. | Pupil can, with support, can answer questions using evidence gathered from different types of scientific enquiry, e.g. comparing life cycles of different plants using change over time, surveys and secondary research. | Pupil can answer questions using evidence gathered from different types of scientific enquiry, e.g. operation of circulatory system from experiment, survey and secondary research. |
| c) Pupils can identify and manage variables | N/A | N/A | Pupil can set up a comparative test, e.g. how far things move on different surfaces. | Pupil can set up comparative and fair tests, e.g. finding patterns in the sounds made by elastic bands of different thicknesses. | Pupil can, with prompting, identifies and manages variables, e.g. when exploring falling paper cones. | Pupil can identify and manage variables, e.g. distances and sizes in shadow formation. |
| **2) Conducting experiments** | a) Pupils can use equipment to take measurements | Pupil can examine objects to note key features, e.g. observe growth of plants they have planted. | Pupil can examine carefully, e.g. using a hand lens. | Pupil can use various equipment, as instructed, e.g. using a hand lens to examine rocks. | Pupil can use various equipment, as instructed, repeatedly and with care, e.g. thermometers. | Pupil can, following discussion of alternatives, selects appropriate equipment, e.g. using a shadow stick and measuring length and angle of shadow. | Pupil can use appropriate equipment, such as meter rule, to take measurements, such as distance travelled by light. |
| Pupil can, with support, conduct simple tests, e.g. comparing the properties of different materials. | Pupil can conduct simple tests, e.g. setting up comparative tests to show that plants need water and light. | N/A | N/A | N/A | N/A |
| b) Pupils explore how to improve the quality of data |  N/A | N/A | Pupil can use standard measurements when taking measurements, e.g. measuring distances between a light source and an object. | Pupil can recognise the importance of using standard units and measures accurately, e.g. measuring temperature when investigating its effect on washing drying. | Pupil can take measurements that are precise as well as accurate, e.g. measuring the force needed to pull different shapes of boat through the water. | Pupil can consider how by modifying instrument or technique, measurements can be improved, e.g. when recording route of light rays. |
| c) Pupils understand the role of repeat readings | N/A | N/A | N/A | N/A | Pupil can know how to process repeat readings, e.g. when timing falling objects. | Pupil can identify situations in which taking repeat readings will improve the quality of evidence, e.g. investigating the behaviour of components in a circuit. |
| **3) Recording evidence** | a) Pupils record work with diagrams and label them | Pupil can, with prompting, identify what might usefully be recorded, e.g. drawing structures of plants or recording changing day length. | Pupil can, with assistance, draw and label diagrams, e.g. recording plants changing over time, starting from seed or bulb. | Pupil can, with prompting, draw and label diagrams, e.g. to show how water travels in a plant. | Pupil can use words and diagrams to record findings, e.g. how habitats change during the year. | Pupil can start to use labelled diagrams to show more complex outcomes, e.g. comparing the time of day at different places on the earth. | Pupil can use labelled diagrams to show complex outcomes, e.g. relating specific adaptations of organisms to environmental factors. |
| b) Pupils can display data using labelled diagrams, keys, tables and bar charts | N/A | N/A | Pupil can, with prompting, use tables to record evidence, e.g. recording what happens when various rocks are rubbed together. | Pupil can use various ways to record evidence, e.g. comparing the teeth of herbivores and carnivores. | Pupil can, with prompting, use various ways to record complex evidence, e.g. when investigating how gears and levers enable a small force to have a larger effect. | Pupil can use various ways, as appropriate, to record complex evidence, e.g. in the construction of a key to aid plant identification. |
| c) Pupils can display data using line graphs | N/A | N/A | Pupil can, with prompting, gather and display evidence in various ways, e.g. about the ways that magnets behave in relation to each other. | Pupil can use various ways to record, group and display evidence, e.g. grouping and classifying various materials. | Pupil can use a line graph to record basic data, e.g. length and mass of a baby as it grows. | Pupil can use line graphs to display complex data, e.g. size of object in relation to the size of the shadow it casts. |
| **4) Reporting findings** | a) Pupils process findings to develop conclusions and identify causal relationships | Pupil can identify key findings from an enquiry, e.g. noting how plants have changed over time. | Pupil can identify and group key outcomes from enquiry, e.g. describing conditions in different habitats and how these affect the numbers and types of organisms. | Pupil can, with prompting, write a conclusion based on evidence, e.g. exploring the strengths of different magnets. | Pupil can write a conclusion based on evidence, e.g. effect on brightness of bulbs if more cells are added. | Pupil can, with prompting, write a conclusion using evidence and identifying causal links, e.g. investigating what makes a parachute fall quicker. | Pupil can write a conclusion using evidence and identifying causal links, e.g. in the design of a periscope. |
| b) Pupils use displays and presentations to report on findings | N/A | N/A | Pupil can indicate findings from an enquiry that could be reported, e.g. answering questions about how rocks are formed. | Pupil can present findings either in writing or orally, e.g. relating to investigating which materials are conductors. | Pupil can, with support, display and present key findings from enquiries orally and in writing, e.g. suggesting reasons for similarities and differences between various animals. | Pupil can display and present key findings from enquiries orally and in writing, e.g. deciding how well classifications fit unfamiliar animals and plants. |
| c) Pupils explain confidence in findings | N/A | N/A | N/A | N/A | Pupil can, with support, indicate why some results may not be entirely trustworthy, e.g. when timing falling objects. | Pupil can, in conclusions, indicate how trustworthy they are, e.g. in relating brightness of bulb to voltage supplied. |
| **5) Conclusions and predictions** | a) Pupils can analyse data | Pupil can collect data, e.g. comparing and contrasting familiar plants. | Pupil can collect data relevant to the answering of questions, e.g. seeing how the shapes of some materials can be changed. | Pupil can, with prompting, recognise patterns that relate to scientific ideas, e.g. investigating the behaviour of magnets. | Pupil can recognise patterns that relate to scientific ideas, e.g. finding out which materials make better earmuffs. | N/A | N/A |
| b) Pupils can draw conclusions | Pupil can suggest answers to enquiry questions using data, e.g. describe how to group plants. | Pupil can answer enquiry questions using data and ideas, e.g. to help decide how the properties of certain materials make them suitable for certain applications. | Pupil can, with support, use evidence to produce a simple conclusion, e.g. the changes that occur when rocks are in water. | Pupil can use evidence to produce a simple conclusion, e.g. the effect of temperature on various substances. | Pupil can show how evidence supports a conclusion, e.g. researching gestation periods of various mammals and relating them to adult mass. | Pupil can identify how an idea is supported or refuted by evidence, e.g. selective breeding to produce animals or plants with desirable characteristics. |
| c) Pupils can develop investigation further | N/A | N/A | Pupil can suggest how an investigation could be extended, e.g. suggesting creative uses for different magnets. | Pupil can use evidence to suggest further relevant investigations, e.g. making own instruments, using ideas about pitch and volume. | Pupil can suggest further relevant comparative or fair tests, e.g. when testing materials for various properties to determine their suitability for an application. | Pupil can evaluate which further comparative or fair tests would be particularly useful. |
| **Science : Physics** |
|  | **KS1** | **Lower KS2** | **Upper KS2** |
| **End of Year 1, expected:** | **End of Year 2, expected:** | **End of Year 3, expected:** | **End of Year 4, expected:** | **End of Year 5, expected:** | **End of Year 6, expected:** |
| **1) There are contact and non-contact forces; these affect the motion of objects.** | N/A | N/A | Compare how an object, such as a toy car, will move on different surfaces. | N/A | Explain that gravity causes objects to fall towards Earth. | N/A |
| Recognise the difference between contact and contact forces. | Describe how motion may be resisted by air resistance, water resistance or friction. |
| Describe how magnets attract or repel each other, and attract magnetic materials. | Describe how some devices may turn a smaller force into a larger one. |
| Group materials on the basis of testing for being magnetic. |
| Describe and identify the poles of a magnet. |
| Predict outcomes of a particular arrangement of magnets. |
| **2) Day, night, month, seasonal change & year are caused by the position and movement of the Earth** | Describe seasonal changes. | N/A | Draw a diagram or use a model to describe planetary orbits. | N/A | N/A | N/A |
| Relate weather patterns and day length to seasons. | Draw a diagram or use a model to describe the Moon's orbit around the Earth. |
| Describe the Sun, Earth & Moon as spheres. |
| Use a diagram or model to explain why the Sun seems to travel across the sky, and what causes day and night. |
| **3) Light & sound can be reflected & absorbed and enable us to see & hear** | N/A | N/A | Relate being able to see to the presence of light. | Explain, with reference to vibrations, how an object makes a sound. | N/A | Represent light using straight line ray diagrams. |
| Describe how some objects reflect light. | Describe the role of a medium in the transmission of sound. | Draw diagrams using straight lines showing light travelling to the eye. |
| Describe how and why our eyes should be protected from sunlight. | Describe the effect of moving further from the source of a sound. | Explain how we can see an object by referring to light travelling into the eye. |
| Explain how shadows are made. | Explain with reference to a particular object how the pitch of the sound can be changed. | Draw a diagram showing an object, shadow and light to relate object shape to shadow shape. |
| Describe how to change the size of a shadow. | Explain with reference to a particular object how the volume of the sound can be changed. |
| **4) Electricity can make circuits work and can be controlled to perform useful functions** | N/A | N/A | N/A | List examples of appliances that run on electricity. | N/A | Explain how number and voltage of cells affects the lamp or buzzer. |
| Construct a simple circuit and name its components. | Explain the use of switches, how bulbs can be made brighter and buzzers made louder. |
| Sort materials into conductors and insulators, identifying metals as conductors. | Represent a circuit that has been constructed using symbols. |
| Predict whether a particular arrangement of components will result in a bulb lighting. |
| Predict how the operation of a switch will affect bulbs lighting. |
| **Science: Chemistry** |
|  | **KS1** | **Lower KS2** | **Upper KS2** |
| **End of Year 1, expected** | **End of Year 2, expected** | **End of Year 3, expected** | **End of Year 4, expected** | **End of Year 5, expected**  | **End of Year 6, expected** |
| **1) Different rocks have different properties and the formation of soil & fossils can be explained.** | N/A | N/A | Explain how fossils are formed. | N/A | N/A  | N/A |
| Describe how soil is made. |
| **2) Materials have physical properties which can be investigated and compared** | Correctly identify both object and material. | Describe changes achieved by applying forces in different directions. | Examine and test rocks, grouping them according to the results. | Group materials according to their state of matter. | Test and sort a range of materials based on their physical properties. | N/A |
| Identify and name a range of materials. | N/A | N/A | N/A | Describe how some materials, e.g. sugar, will dissolve and can be retrieved. |
| Describe a range of properties of a variety of materials. | Justify separation techniques proposed, with reference to materials being separated. |
| Classify a variety of materials into groups based on physical properties. | Show how the original materials can be retrieved from each of these changes. |
|  | Identify reactants and products of chemical changes and recognise these as being irreversible. |
| **3) The physical properties of materials determine their uses.** | N/A | Select and justify a material for a particular use. | N/A | N/A | Use evidence to justify the selection of a material for a purpose. | N/A |
| **4) Materials can exist in different states and that these states can sometimes be changed** | N/A | N/A | N/A | Describe how evaporation and condensation happen in the water cycle, and how temperature affects evaporation. | N/A | N/A |
| Identify changes of state and research values of degrees Celsius at which changes happen. |
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| **Science: Biology** |
|  | **KS1** | **Lower KS2** | **Upper KS2** |
| **End of Year 1, expected:** | **End of Year 2, expected:** | **End of Year 3, expected:** | **End of Year 4, expected:**  | **End of Year 5, expected:**  | **End of Year 6, expected:**  |
| **1) Living things can be classified according to observable features** | N/A | N/A | N/A | Suggest different ways of sorting the same group of living things, e.g. grouping birds according to where they live, what they eat and size of adults. | N/A | Use similarities and differences in observable features to decide how living things should be grouped e.g. a cat is a mammal because it is warm blooded and gives birth to live young. |
| Use similarities and differences in observable features to decide how living things should be grouped e.g. a cat is a mammal because it is warm blooded and gives birth to live young. | Explain why certain features are useful in classifying living things, e.g. backbones in animals and flowers in plants. |
| **2) Habitats provide living things with what they need** | N/A | Explain how, for a named animal or plant, it gets what it needs from its habitat and other living things that are there. | Explain what all plants need to flourish and recognise how these requirements vary in amount. | N/A | N/A | N/A |
| Identify a range of living things in habitats of various sizes. | N/A |
| Construct a simple food chain and identify what is eating what. |
| Explore and identify what plants need to thrive. |
| **3) Living things exhibit variation and adaptation and these may lead to evolution.** | N/A | N/A | N/A | N/A | N/A | Use fossils as evidence that living things have changed over time, e.g. explain that these have died out and others have taken their place. |
| Recognise that offspring normally vary from each other and from their parents, e.g. that puppies vary from each other and from their parents. |
| Describe examples of a living thing that has adapted to live in a particular habitat and evolved as a result, e.g. a polar bear or cactus. |
| **4a) Life exists in a variety of forms and goes through cycles – Plants** | Identify a range of local plants. | Describe stages of development of a full grown plant. | Describe what each part of a flowering plant does. | N/A | N/A | N/A |
| Name parts of a range of familiar plants. | N/A | Explain, with the aid of a diagram or plant, how water is carried up from the soil. |
| Compare and contrast a collection of items, sorting into categories: 'living', 'dead' and 'things that have never been alive'. | Explain how pollination, seed formation and seed dispersal play a role in the reproduction of flowering plants. |
| **4b) Life exists in a variety of forms and goes through cycles – Animals** | Name a variety of common animals. | Describe the relationship between adult animals and their offspring. | Describe why animals depend on the correct nutrition. | N/A | Identify similarities and differences in two different life cycles, e.g. sparrow and butterfly, with reference to eggs and intermediate stages. | N/A |
| Identify and group a range of familiar animals. | Identify human's basic needs. | N/A | Describe the changes as humans develop to old age, e.g. trends in changes to size, weight, mobility etc. |
| **k** | Identify key features of a range of common animals. | Describe the importance of a healthy diet and exercise. | Explain which parts of the skeleton provide support and protection, and how they allow for movement. | Identify what each of the principal organs in the digestive system do. | Describe in sequence the stages of reproduction in some plants and animals, e.g. dog and a thistle. | Describe what heart, blood vessels and blood do, e.g. carry oxygen to all parts of the body. |
| Relate each of the human senses to organs. | N/A | N/A | Describe the function of each type of tooth in the human skull. | N/A | Suggest how their bodies are affected by substances and actions, e.g. that a high fat diet coupled with little exercise is likely to lead to obesity. |
|  | Use a food chain to represent predator-prey relationships. | Describe with aid of diagrams the route that water takes within animals, e.g. through the human body. |