

Subject	Subject specifics	By the end of KS1	By the end of LKS2	By the end of UKS2
Science	Working Scientifically	<p><u>Critical concept: Fair testing</u></p> <ul style="list-style-type: none"> • Perform simple tests. To understand an 'investigation' to be a search for facts. • Ask simple questions. * Predict what might happen • Observe closely, using simple equipment. • Identify and classify. * Pupils can observe and describe similarities and differences. • Use observations and ideas to suggest answers to questions. • To understand 'results' as a factual summary of what happened in an experiment. <p>• Gather and record data to help in answering questions. To understand data as observations and measurements taken from an experiment. They should be listed in the form of a chart or graph so you can clearly see the results from the data.</p> <p>Have an opinion about what happened during the experiment. Use what you know + what the information tells you= to make a good guess.</p> <p><u>Vocab re discipline:</u></p> <ol style="list-style-type: none"> 1 Scientist: An expert in science. A scientist tests out ideas and gains knowledge 2. Enquiry: asking for information 3. Compare: look at what is similar or different. 	<p><u>Critical concept: Fair testing</u></p> <ul style="list-style-type: none"> • Pupils understand the concept of fair testing * In a fair test you only change 1 variable at a time while keeping all other variables the same. * A variable is a change in the product * Pupils can set up simple practical enquiries, comparative and fair tests * Ask relevant questions and use different types of scientific enquiries to answer them. • Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Identify differences, similarities or changes related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions or to support their findings. 	<p><u>Critical concept: Fair testing</u></p> <ul style="list-style-type: none"> • Plan enquiries, including recognising and controlling variables where necessary. • To understand that a 'dependent variable'– is what is being measured in an experiment • To understand that the Independent variable is a variable that stands alone and isn't changed by the other variables you are trying to measure • To understand 'controls' are things that stay the same during an experiment. To know that 'constant' means to keep something the same in an experiment • Ask relevant questions. To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision; taking repeat readings when appropriate (eg Pinhole cameras) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. (eg Climate, decomposition) Understand X-axis: The line on a graph that runs horizontally (left-right) through zero. It is used as a reference line so you can measure from it. Understand Y-axis: The line on a graph that runs

		<p>4 Scientific test: A test to find something out</p>	<p>*Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. To understand a conclusion comes at the end of the experiment and is your opinion about what happened.</p> <p>*To understand a hypothesis as a suggested explanation as a starting point for further investigation. Pupils begin to hypothesise.</p> <p><u>Vocab re discipline:</u></p> <p>1 Scientist: An expert in science. A scientist gathers and uses research and evidence, making a hypothesis and testing it, to gain knowledge.</p> <p>2 Enquiry: asking/posing a question to gain information/knowledge</p> <p>3 Hypothesis: An idea or explanation for something that is a starting point for further investigation (but it has not yet been proved).</p> <p>4 Fair test: A fair test is a test which only changes one variable. (This means the person carrying out the test is able to know that no other variable has affected the results of the test).</p> <p>5 Variable: A number, amount, or factor that can change.</p> <p>6 Observation(s): Closely monitor/observe something , looking for specific details</p> <p>7 Prediction: A forecast of what will happen under specific conditions.</p> <p>8 Evidence: body of facts/information indicating whether something is true or not. Does it support the hypothesis?</p>	<p>vertically (up-down) through zero. It is used as a reference line so you can measure from it.</p> <ul style="list-style-type: none"> • Report findings from enquiries, including causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations <p>*Use results to draw conclusions. In their conclusions to try to give explanations involving causal relationships. To make predictions for new values, suggest improvements, raise further questions to set up further comparative and fair tests.</p> <ul style="list-style-type: none"> • Pupils are able to hypothesise, respond to a hypothesis and further develop a hypothesis to investigate a new avenue. <p>*Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p><u>Vocab re discipline</u></p> <p>1 Scientist: An expert in science. A scientist gathers and uses research and evidence, making a hypothesis and testing it, to gain knowledge.</p> <p>2 Enquiry: asking/posing a question to gain information/knowledge</p> <p>3 Hypothesis: An idea or explanation for something that is a starting point for further investigation (but it has not yet been proved).</p>
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	Biology	<p>Plants</p> <ul style="list-style-type: none"> • Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 	<p>Plants</p> <ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. 	<p>Plants</p> <ul style="list-style-type: none"> • Relate knowledge of plants to studies of evolution and inheritance. • Relate knowledge of plants to studies of all living things. <p>Understand animals and humans</p> <ul style="list-style-type: none"> • Describe the changes as humans develop to old age. • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.

		<p>Understand animals and humans</p> <ul style="list-style-type: none"> • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets). • Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Notice that animals, including humans, have offspring which grow into adults. • Investigate and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene <p>Investigate living things</p> <ul style="list-style-type: none"> • Explore and compare the differences between things that are living, that are dead and that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including microhabitats. 	<p>Understand animals and humans</p> <ul style="list-style-type: none"> • Identify that animals, including humans, need the right types and amounts of nutrition that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Identify that humans and some animals have skeletons and muscles for support, protection and movement. • Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. <p>Investigate living things</p> <ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys. • Recognise that environments can change and that this can sometimes pose dangers to specific habitats. <p>Understand evolution and inheritance</p> <ul style="list-style-type: none"> • Identify how plants and animals, including humans, resemble their parents in many features. • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Identify how animals and plants are suited to and adapt to their environment in different ways. 	<ul style="list-style-type: none"> • Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions. • Describe the ways in which nutrients and water are transported within animals, including humans. <p>Investigate living things</p> <ul style="list-style-type: none"> • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals. • Describe how living things are classified into broad groups according to common observable characteristics. • Give reasons for classifying plants and animals based on specific characteristics. <p>Understand evolution and inheritance</p> <ul style="list-style-type: none"> • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
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	Chemistry	<p>Investigate materials</p> <ul style="list-style-type: none"> Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 	<p>Rocks and Soils</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their simple, physical properties. Relate the simple physical properties of some rocks to their formation (igneous or sedimentary). Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock. Recognise that soils are made from rocks and organic matter. <p>States of Matter</p> <ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<p>Investigate materials</p> <ul style="list-style-type: none"> Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets. Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. 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, oxidation and the action of acid on bicarbonate of soda.
	Physics	Understand movement, forces and magnets	Understand movement, forces and magnets <ul style="list-style-type: none"> Compare how things move on different surfaces. 	Understand movement, forces and magnets <ul style="list-style-type: none"> Describe magnets as having two poles.

		<ul style="list-style-type: none"> • Notice and describe how things move, using simple comparisons such as faster and slower. • Compare how different things move. <p>Understand light and seeing</p> <ul style="list-style-type: none"> • Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes. <p>Investigate sound and hearing</p> <ul style="list-style-type: none"> • Observe and name a variety of sources of sound, noticing that we hear with our ears. <p>Understand electrical circuits</p> <ul style="list-style-type: none"> • Identify common appliances that run on electricity. <p>Understand the Earth's movement in space</p> <ul style="list-style-type: none"> • Observe the apparent movement of the Sun during the day. • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. 	<ul style="list-style-type: none"> • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. <p>Understand light and seeing</p> <ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the size of shadows change. <p>Investigate sound and hearing</p> <ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. <p>Understand electrical circuits</p>	<ul style="list-style-type: none"> • Predict whether two magnets will attract or repel each other, depending on which poles are facing. • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces. • Describe, in terms of drag forces, why moving objects that are not driven tend to slow down. • Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. • Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect. <p>Understand light and seeing</p> <ul style="list-style-type: none"> • Understand that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes. • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.
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