

Science Curriculum Map 2020/21

Year	Biology	Chemistry	Physics	Working Scientifically
1	<p><u>Humans</u></p> <ul style="list-style-type: none"> Identify, name, draw and label the basic parts of the human body. Say which part of the body is associated with each sense. <p><i>Identify body parts.</i> <i>Compare feel/sound/taste/look/smells.</i></p> <p><u>Animals</u></p> <ul style="list-style-type: none"> Identify and name a variety of common animals from different animal groups. Identify and name a variety of carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals. <p><i>Group animals by diet (Venn diagrams).</i> <i>Research animal structures/features.</i> <i>Group animals by features (drawings).</i></p> <p><u>Plants</u></p> <ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of common flowering plants, including trees. <p><i>Group plants by habitats and features (tables).</i> <i>Observe plant growth over time.</i> <i>Investigate conditions for plant growth.</i></p>	<p><u>Everyday Materials</u></p> <ul style="list-style-type: none"> Distinguish between objects and their materials. Identify a variety of everyday materials. Describe simple physical properties of everyday materials. Compare and group materials based on their simple physical properties. <p><i>Test material properties (tables).</i> <i>Group materials by properties (tables).</i> <i>Research uses of materials.</i></p>	<p><u>Seasonal Changes</u></p> <ul style="list-style-type: none"> Observe changes across the four seasons. Observe and describe weather associated with seasons and day length. <p><i>Observe tree leaf changes through the school year.</i> <i>Observe weather/day length changes.</i> <i>Find patterns in seasonal changes.</i></p>	<p><u>KS1:</u> Pupils will be taught to use the following methods, processes and skills through the teaching of this subject.</p> <ul style="list-style-type: none"> Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests. Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions. <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p><u>Scientific Enquiry links</u></p> <ul style="list-style-type: none"> ● Observing over time ● Comparative and fair test ● Grouping and classifying ● Researching ● Pattern seeking </div>

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2	<p><u>Animals including Humans</u></p> <ul style="list-style-type: none"> • Notice that animals have offspring which grow into adults. • Identify the basic needs of animals for survival. • Describe the importance of exercise, diet and hygiene. <p><i>Observe animal growth over time.</i> <i>Find patterns in animal lifecycles.</i> <i>Research healthy lifestyles.</i> <i>Classify healthy and non-healthy foods (Venn diagrams).</i> <i>Investigate effects of exercise (tables, bar charts).</i></p> <p><u>Living Things and their Habitats</u></p> <ul style="list-style-type: none"> • Explore and compare differences between things that are living, dead and never alive. • Identify that most living things live in habitats to which they are suited. • Identify and name a variety of plants and animals in their habitats. • Describe how animals obtain their food from plants and other animals through food chains. <p><i>Group objects by living, dead or never alive (tables).</i> <i>Group animals/plants by habitats and diets (tables, drawings).</i> <i>Find patterns in animal adaptations.</i> <i>Investigate local microhabitats (pictograms).</i> <i>Research animal diets (food chains).</i></p> <p><u>Plants</u></p> <ul style="list-style-type: none"> • 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><i>Investigate plant needs. Compare conditions for plant growth.</i> <i>Observe plant growth over time (drawings, bar charts).</i></p>	<p><u>Uses of Everyday Materials</u></p> <ul style="list-style-type: none"> • Identify and compare the suitability of a variety of everyday materials for particular uses. • Find out how the shapes of solid objects from some materials can be changed by squashing, bending, twisting and stretching. <p><i>Investigate material properties and their suitability (tables).</i> <i>Classify and group materials (tables).</i> <i>Observe changes to materials.</i> <i>Research material uses in real world.</i></p>		<p><u>KS1:</u> Pupils will be taught to use the following methods, processes and skills through the teaching of this subject.</p> <ul style="list-style-type: none"> • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><u>Scientific Enquiry links</u></p> <ul style="list-style-type: none"> ● Observing over time ● Comparative and fair test ● Grouping and classifying ● Researching ● Pattern seeking </div>

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3	<p><u>Animals including Humans</u></p> <ul style="list-style-type: none"> Identify that animals need the right types and amount of nutrition and that they cannot make their own food. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p><i>Research animal diets.</i> <i>Group animals by diets (Venn diagrams).</i> <i>Group animals by skeletons (tables).</i></p> <p><u>Plants</u></p> <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants. Explore the requirements of plants for life and growth and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the life cycle of flowering plants including pollination, seed formation and seed dispersal. <p><i>Investigate plant needs. Compare conditions for plant growth.</i> <i>Observe plant growth over time (drawings).</i> <i>Observe how water is transported in plants (bar charts).</i></p>	<p><u>Rocks</u></p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their simple properties. Recognise that soils are made from rocks and organic matter. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. <p><i>Investigate rock properties (tables).</i> <i>Group rocks by properties.</i> <i>Compare and contrast soils.</i> <i>Research fossil formation.</i></p> <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p style="text-align: center;"><u>Scientific Enquiry links</u></p> <ul style="list-style-type: none"> ● Observing over time ● Comparative and fair test ● Grouping and classifying ● Researching ● Pattern seeking </div>	<p><u>Light</u></p> <ul style="list-style-type: none"> Recognise that light is needed to see and 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 the eyes. Recognise that shadows are formed when a light source is blocked by a solid object. Find patterns in the way the size of shadows change. <p><i>Investigate light sources (tables).</i> <i>Group reflective vs non-reflective objects.</i> <i>Find patterns in shadow sizes.</i></p> <p><u>Forces and Magnets</u></p> <ul style="list-style-type: none"> Compare how things move on different surfaces. Notice that some forces need contact between two objects but magnetic forces can act at a distance. Observe how magnets 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><i>Investigate force effects and magnetism (bar charts).</i> <i>Group magnetic vs non-magnetic materials.</i></p>	<p><u>Lower KS2:</u> Pupils will be taught to use the following methods, processes and skills through the teaching of this subject.</p> <ul style="list-style-type: none"> Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations. Take accurate measurements using range of equipment, including thermometers and data loggers (where appropriate). 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, keys, bar charts and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support findings.

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4	<p><u>Animals including Humans</u></p> <ul style="list-style-type: none"> 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. Construct and interpret a variety of food chains, identifying producers, predators and prey. <p><i>Research animal teeth and diets.</i> <i>Investigate functions of different teeth.</i> <i>Group and classify animals by diet (food chains).</i></p> <p><u>Living Things and their Habitats</u></p> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in local and wider environments. Recognise that environments can change and that this can sometimes pose dangers to living things. <p><i>Classify animals in different ways (classification keys, Venn/Carroll diagrams).</i> <i>Research changes in environments.</i> <i>Do environmental changes affect animal populations?</i></p>	<p><u>States of Matter</u></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. Measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. <p><i>Group and classify materials (tables).</i> <i>Investigate and observe changes in states over time, including evaporation (tables, bar charts).</i> <i>Research water cycle (diagrams).</i></p> <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p style="text-align: center;"><u>Scientific Enquiry links</u></p> <ul style="list-style-type: none"> ● Observing over time ● Comparative and fair test ● Grouping and classifying ● Researching ● Pattern seeking </div>	<p><u>Electricity</u></p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts. Identify whether or not a lamp will light in a simple series circuit based on whether it is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators and associate metals with being good conductors. <p><i>Investigate simple circuits and object conductivity (tables).</i> <i>Find patterns in bulb brightness.</i> <i>Group conductors and insulators (tables).</i></p> <p><u>Sound</u></p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sound travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases. <p><i>Investigate sound and find patterns (tables, graphs).</i></p>	<p><u>Lower KS2:</u> Pupils will be taught to use the following methods, processes and skills through the teaching of this subject.</p> <ul style="list-style-type: none"> Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations. Take accurate measurements using range of equipment, including thermometers and data loggers (where appropriate). 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, keys, bar charts and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support findings.

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5	<p><u>Animals including Humans</u></p> <ul style="list-style-type: none"> Describe the changes as humans develop to old age. <p><i>Research and observe changes in human growth (diagrams).</i> <i>Investigate human growth: comparative test on hand and shoe size (tables, scatter graphs).</i></p> <p><u>Living Things and their Habitats</u></p> <ul style="list-style-type: none"> Describe the life processes of reproduction in some plants and animals. Describe the differences in the life cycle of a mammal, an amphibian, an insect and a bird. <p><i>Research life cycles (diagrams).</i> <i>Observe changes to animals through life cycles.</i> <i>Find patterns in life cycles. Compare how animals reproduce and grow.</i> <i>Classify and group animals by life cycles.</i> <i>Observe plant growth from cuttings (drawings).</i></p>	<p><u>Properties and Changes of Materials</u></p> <ul style="list-style-type: none"> 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 acid with bicarbonate of soda). Demonstrate that dissolving, mixing and changes of state are reversible changes. <p><i>Investigate and observe changes to materials.</i> <i>Investigate and observe dissolving and mixing (tables, graphs).</i> <i>Compare reversible vs non-reversible changes.</i> <i>Classify and group materials.</i> <i>Find patterns in time taken to dissolve.</i></p>	<p><u>Forces</u></p> <ul style="list-style-type: none"> 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 air resistance, water resistance and friction. Recognise that some mechanisms allow a smaller force to have a greater effect, including levers, pulleys and gears. <p><i>Investigate and observe effects of different forces (tables, graphs).</i> <i>Find patterns in force investigations.</i> <i>Classify and group mechanisms.</i></p> <p><u>Earth and Space</u></p> <ul style="list-style-type: none"> Describe the movement of the Earth and other planets relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. <p><i>Research planets (diagrams).</i> <i>Classify and group planets (tables).</i> <i>Find patterns in planet orbits.</i> <i>Research scientific evidence for spherical Earth (debates).</i> <i>Observe movement of sun across sky and moon phases.</i></p>	<p><u>Upper KS2:</u> Pupils will be taught to use the following methods, processes and skills through the teaching of this subject.</p> <ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries in oral and written forms, including conclusions, casual relationships, explanations and degrees of trust in results. Identify scientific evidence that has been used to support or refute ideas or arguments. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Scientific Enquiry links</p> <ul style="list-style-type: none"> ● Observing over time ● Comparative and fair test ● Grouping and classifying ● Researching ● Pattern seeking </div>

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6	<p><u>Animals including Humans</u></p> <ul style="list-style-type: none"> Identify and name the main parts of the circulatory system and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function. Describe the ways in which nutrients and water are transported within animals. <p><i>Investigate and observe pulse rate during exercise over time (tables, line graphs). Find patterns in results.</i></p> <p><i>Research healthy lifestyles. Group and classify healthy vs non-healthy items (table, Venn diagrams).</i></p> <p><u>Living Things and their Habitats</u></p> <ul style="list-style-type: none"> Describe how living things (including plants, animals and micro-organisms) are classified into broad groups according to common observable characteristics. Recognise their similarities and differences. Give reasons for classifying plants and animals based on specific characteristics. <p><i>Research animal characteristics.</i></p> <p><i>Classify animals/plants in different ways (classification keys, Venn/Carroll diagrams).</i></p> <p><u>Evolution and Inheritance</u></p> <ul style="list-style-type: none"> Recognise that living things produce offspring of the same kind but normally offspring vary and are not identical to their parents. 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 adapted to suit their environment in different ways and that adaptation leads to evolution. <p><i>Research scientific evidence for evolution (debates).</i></p> <p><i>Research to observe changes over time and find patterns in adaptations (diagrams).</i></p> <p><i>Investigate effectiveness of different adaptations.</i></p>		<p><u>Electricity</u></p> <ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, loudness of buzzers and setting of switches. Use recognised symbols when representing a simple circuit in a diagram. <p><i>Investigate and observe circuit efficiency with differing equipment (tables, scatter graphs).</i></p> <p><i>Find patterns in brightness of bulbs and loudness of buzzers.</i></p> <p><u>Light</u></p> <ul style="list-style-type: none"> Recognise 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 eye. 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. <p><i>Investigate and observe light travel, reflection and shadows (diagrams).</i></p> <p><i>Find patterns in shadow shape and size.</i></p>	<p><u>Upper KS2:</u> Pupils will be taught to use the following methods, processes and skills through the teaching of this subject.</p> <ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries in oral and written forms, including conclusions, casual relationships, explanations and degrees of trust in results. Identify scientific evidence that has been used to support or refute ideas or arguments. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><u>Scientific Enquiry links</u></p> <ul style="list-style-type: none"> ● Observing over time ● Comparative and fair test ● Grouping and classifying ● Researching ● Pattern seeking </div>