

Skills Progression Sheet
KS2 Science
September 2025

Year 3	Year 4	Year 5	Year 6
<u>Board Game Bonanza (Autumn 1)</u> - Comparing the effect of different surfaces on magnetic forces. - Investigating the attracting and repelling nature of magnets. - Group materials based on magnetic properties. - Describing how the two poles of a magnet behave. - Making a prediction on the likelihood of magnets attracting or repelling. - Group materials based on magnetic properties including comparing and identifying. - Notice that some forces need contact between two objects, but magnetic forces can act at a distance. <u>Greater Depth</u> - Include more than one magnetic element to the game. - Use examples of attracting and repelling in the game.	<u>Bright Sparks (Autumn 2)</u> - Identify electrical hazards from an image and then produce an information leaflet/poster outlining the dangers and safety measures needed. - Identify that there are two sources of power - mains and batteries - and the appliances that run from each. - Experiment with a range of electrical components, noticing the effects of doing different things (adding batteries/lamps etc.). - Explore what makes or breaks a circuit and why. - Add a switch to their circuit to prove that the bulb requires a complete circuit in order to work. - Identify common appliances that run on electricity. - Construct a simple series electrical circuit, identify and naming its basic parts including cells, wires, bulbs, and switches and buzzers. - Identify whether or not a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery.	<u>Reach for the Stars (Autumn 2)</u> - Use observations and research to explain how the planets orbit the sun. - Use observations and research to explain how the Earth rotates around the sun. - Describe the movement of the moon relative to the Earth. - Describe the sun, Earth and moon as approximately spherical bodies. - Observe and describe the effects of gravity on Earth (good link with work forces). - Research the planets and sun in our solar system. - Compare the similarities, and differences, of planets in our solar system. - Classify the planets in our solar system based on set criteria and describe. - Describe the eight phases of the moon and explain what causes them. - Use the idea of the Earth's rotation to explain day and night	<u>Discovering Galapagos (Autumn 2)</u> <u>Evolution and Inheritance:</u> - Recognise that living things change over time and that fossils provide information about living things that inhabited Earth millions of years ago. - Recognise that living things produce offspring but normally offspring vary and are not identical to their parents. - Identify that animals and plants are adapted to suit their environment in different ways, and that adaption may lead to evolution. <u>Living Things and Their Habitats:</u> - 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.

<u>Light (Spring 1)</u> - Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (investigating how shadows form and how they are affected by light). - Compare the patterns in shadow formation. - Recognise that they need light in order to see things and that dark is the absence of light. - Observe correct safety procedures regarding sunlight. - Understand the correlation between types of surface and their reflective properties (shiny, smooth, opaque, translucent, transparent, matt). - Observe how shadows are formed and change throughout the day. - Recognise that shadows are formed when the light from a light source is blocked by a solid object. <u>Greater Depth</u> - Use a range of scientific terminology to describe the different concepts in Light. - Have more autonomy over the design and method of scientific investigations.	- Through experimentation and the PLAN, DO, REVIEW cycle, investigate simple insulators and conductors and associate metals with being good conductors. <u>Greater Depth</u> Pupils should work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can (and some cannot) be used to connect across a gap in a circuit. <u>Sound (Bright Sparks)</u> - Explore vibrations through a variety of real-life examples (such as using rhythm sticks in water and musical instruments). Year 4 targets. - Investigate the differing pitches of musical instruments. Year 4 targets. <u>Incredible Iceland Land of Fire and Ice (Spring 2)</u> - Compare and group materials based on their properties. - Test how materials can be changed through heating and cooling, and measure or research the temperature at which this happens in degree Celsius - Explain how the particles of a substance are the same in each	and the apparent movement of the sun across the sky. - Discuss the events of The Space Race and justify answers/opinions using prior knowledge. <u>Greater Depth</u> Propose a design using solar panels that will supply the energy requirements for a research habitat on the Moon or on Mars. Assume there will be a research crew of six humans, and current technology will be used for solar panels. Take on the role of a person who believed in the geocentric model in a debate. <u>Kensuke's Kingdom (Summer 1)</u> - Compare and group everyday materials based on their properties including hardness, solubility, transparency, conductivity and response to magnets. - Use knowledge of solids, liquids and gases to decide how mixtures might be separated including through filtering, sieving and evaporating. - Demonstrate that dissolving, mixing, and changes of state are reversible changes.	- Give reasons for classifying plants and animals based on specific characteristics. <u>Greater Depth</u> Plan, film, edit and deliver a documentary informing the audience on a new species found on the Galapagos Islands. To include information on classification and how it has adapted over time to its new, unique environment <u>Light (Spring 1)</u> - 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. <u>Electricity (Spring 1)</u> - To create a range of circuits, both simple and in series, using a selection of components including buzzers, lamps, switches, and cells.
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<u>Trust me I'm a botanist (Summer 1)</u> • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (investigating what plants need to grow). • Creating scientific diagrams and labels through identifying the key parts (drawing and labelling flowers and fruits). • Explore by dissecting flowers and fruits and explain their parts and functions • Explore the part that flowers play in the life cycle of flowering plants including, pollination, seed formation and seed dispersal • Comparing the different factors in plant growth including life and how this varies from plant to plant (air, light, water, nutrients and room to grow) • Investigate the way in which water is transported in plants • Observe plants and look for patterns. • Classify animals and organisms that do and do not have skeletons and muscles for support, protection and movement.	state, but their arrangement and movement change. • Identify the part played by evaporation and condensation in the water cycle, associate the rate of evaporation with temperature. • Explain the different stages of the water cycle. <u>Greater Depth</u> To devise their own experiment to investigate what different materials can be a solid, liquid or gas. To create a model of the water cycle. <u>Mortimer Masterchef (Summer 2)</u> • Investigate through the use of secondary sources milk and adult teeth (numbers and types). • Make a model of the digestive system to demonstrate the process. • Construct and interpret a variety of food chains, identifying producers, predators, and prey. • Identify and classify teeth in humans by comparing the teeth and their simple functions of carnivores and herbivores. <u>Greater Depth</u> To create food chains using research and prior learning for a wider range of different animals.	• Use evaporation to recover soluble substances from solutions. • Use filtering and sieving to recover insoluble substances from water. • Describe and compare the three states of matter using melting, freezing, evaporation and condensation. • Observe and compare reversible and irreversible changes to materials. • Give justified reasons, based on comparative and fair tests, for the particular uses of everyday materials including metals, wood and plastic. • Know that some materials will dissolve in a liquid to form a solution and describe how to recover a substance from a solution. • Explain that some changes result in the formation of new materials and this kind of change is not usually reversible e.g., burning, and the action of acid on bicarbonate of soda. <u>Greater Depth</u> • Evaluate and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials	• To accurately draw a range of circuits reflecting different components. • To take the necessary precautions for working safely with electricity. • Associate the brightness of a lamp, or 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 brightness of bulbs, loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit on a diagram. <u>Greater Depth</u> Children can investigate and learn about circuits in parallel. Then they can use their knowledge of simple, series and parallel circuits to create different effects in their games, being able to predict the outcome before trying. They will explain which is the best for different purposes. <u>Blood Heart (Spring 2)</u> • To identify the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood. • To dissect a sheep's heart and describe how the blood travels through the heart and then onto the body. • To explain how to keep their bodies healthy and how their
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- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food, they get nutrition from what they eat. - To consider and investigate how some states of matter can be changed permanently and some can be reversed e.g., though heating and cooling. <u>Greater Depth</u> Create a victory poster to celebrate finding a 'newly discovered' orchid, showing what the buyer would need to do to ensure the orchid survives and grows well. <u>Mortimer V Lyme Regis (Summer 2)</u> - Comparing the appearance and simple physical properties of different rock types, and grouping them together based on these comparisons. - Investigating the process of fossil formation in simple terms. - Labelling diagrams and charts of the different types of fossil in terms of their location and their history. <u>Greater Depth</u>	To investigate the impact that removing an animal from somewhere in the food chain has on the rest of the chain. <u>Living things and their habitats</u> (include with geography field work week) - To identify advantages and disadvantages of certain characteristics. - To suggest how some animals and plants are adapted to extreme environments. - To design an animal and a plant that should thrive and survive in a given environment. - To explore classification systems, understanding that they group according to similarities & differences. - To develop classification keys. - To test out classification keys, identifying potential flaws. - To describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. <u>Greater Depth</u> Use a range of scientific terminology to describe the different concepts in Sound. Have more autonomy over the design and method of scientific investigations.	- Evaluate evidence from comparative and fair tests when giving justified reasons for the particular uses of everyday materials, including metals, wood and plastic. <u>Fantastic Fairgrounds (Summer 2)</u> - Describe and explain which forces are at play on different fairground rides. - Describe and explain how friction helps rides to work. - Create levers, pulleys, or gears on fairground rides. - Describe and explain how, and on which rides, water resistance might be at play. - Describe and explain where gears might be used on a fairground ride. - Identify the effects of air resistance, water resistance and friction that act between moving surfaces by making a fairground ride. - Recognise that some mechanisms including leavers, pulleys and gears allow a small force to have a great effect. <u>Greater Depth</u>	bodies might be damaged – including how some drugs and other substances can be harmful to the human body. - Describe the ways in which nutrients and water are transported within animals including humans. - To work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle, and health. <u>Greater Depth</u> Children to plan and perform a video which will teach others the names of key parts of the heart and will explain its function. The children will also explain the effects of poor lifestyle choices on the heart in the teaching video. This will be shown in the fundraiser to raise awareness of the importance of living a healthy lifestyle.
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• Create a fact file of each kind of rock and each type of soil to share with the rest of the class. • Create a diagram of the life cycle of a fossil.		• Create a working mechanism that includes gears. • Consider a way to include all 3 of the following in your fairground model: gears, pulleys and levers. • Children create their own force meter using simple classroom equipment. They use known masses to calibrate their force meter, adding a sensible scale. Children learn that a mass of 100g experiences a pull towards the Earth due to the force of gravity of approximately 1 newton. • Children explain how their force meter works and why they needed to calibrate it before using it. • Children learn that a lever is a simple machine that can give a mechanical advantage. • Children set up their own lever, with fulcrum, beam and load, and investigate how far from the fulcrum different forces (weights) need to be in order to balance the load. They transfer their results to a line graph and attempt to find a relationship between the force required and the distance from the fulcrum. New unit – include as part of geography field work week /objectives to be included	
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