



## Science Year 3 Long Term Plan

| Themes (Number of weeks/Term)           | Autumn 1<br>Animals, including humans<br>(8 weeks)                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Autumn 2<br>Sustainability<br>Rocks<br>(7 weeks)                                                                                                                                                                                                                                                                                                | Spring 1<br>Rocks<br>(5 weeks)                                                                                                                                                                                                                                                                                                                                                                                                     | Spring 2<br>Light<br>(7 weeks)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Summer 1<br>Plants<br>(6 weeks)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Summer 2<br>Forces and Magnets<br>Plants<br>Sustainability<br>(6 weeks)                                                                                                                                                                                                                                                                                                                                                                                                        |
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| NC<br>Content/Coverage/                 | <b>Biology</b><br><b>Unit 1:</b> Skeletons<br><b>Unit 2:</b> Movement<br><b>Unit 3:</b> Nutrition and diet                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Biology</b><br><b>Unit 4:</b> Food Waste<br><br><b>Chemistry</b><br><b>Unit 5:</b> Rocks                                                                                                                                                                                                                                                     | <b>Chemistry</b><br><b>Unit 6:</b> Fossils<br><b>Unit 7:</b> Soils                                                                                                                                                                                                                                                                                                                                                                 | <b>Physics</b><br><b>Unit 8:</b> Light                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Biology</b><br><b>Unit 9:</b> Plants (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Physics</b><br><b>Unit 10:</b> Forces<br><b>Unit 11:</b> Magnets<br><br><b>Biology</b><br><b>Unit 12:</b> Plants (B)<br><b>Unit 13:</b> Biodiversity                                                                                                                                                                                                                                                                                                                        |
| Substantive knowledge teaching sequence | <ul style="list-style-type: none"> <li>I can identify where the skull, femur, pelvis, spine and ribcage are in the human body and what their functions are.</li> <li>I can explain how the human skeleton is similar to other animals.</li> <li>I can explain what an exoskeleton is.</li> <li>I can sort and group animals based on their skeletons.</li> <li>I can explain why humans have muscles.</li> <li>I can identify the five groups that food can be sorted into and what their functions are. (Fruits and</li> </ul> | <ul style="list-style-type: none"> <li>I can explain what food waste is and what the impacts of food waste are on the planet.</li> <li>I can explain how to reduce food waste in school.</li> <li>I can explain what a rock is and sort and group different rocks.</li> <li>I can identify and sort rocks based on their properties.</li> </ul> | <ul style="list-style-type: none"> <li>I can explain what a fossil is and how they are formed.</li> <li>I can explain why soil is so important and I can identify the different types of soil and what they are made up of.</li> <li>I can plan an experiment to identify which soil absorbs the most water.</li> <li>I can investigate which soil absorbs the most water and evaluate my findings from the experiment.</li> </ul> | <ul style="list-style-type: none"> <li>I can identify light sources and explain how the sun can be harmful.</li> <li>I can explain how we see.</li> <li>I can identify the types of materials that cast shadows.</li> <li>I can explain what a shadow is and how it is formed.</li> <li>I can plan an investigation to investigate how the distance between the light source and the object affects the size of a shadow.</li> <li>I can investigate how the distance between the light source and the object affects the size of a shadow and</li> </ul> | <ul style="list-style-type: none"> <li>I can name the different parts of a plant and explain their functions. (Labelled diagram)</li> <li>I can dissect a plant and identify the main parts.</li> <li>I can plan and set up an experiment to see whether the number of seeds within one plant pot affects the growth of the plants.</li> <li>I can explain how water is transported within plants.</li> <li>I can explain what germination is.</li> <li>I can name the reproductive parts in plants and explain what pollination is.</li> </ul> | <ul style="list-style-type: none"> <li>I can explain what a force is and what friction is.</li> <li>I can plan and carry out an experiment to investigate how the material on a ramp affects the distance a car travels.</li> <li>I can explain how the material on a ramp affects the distance a car travels.</li> <li>I can explain what a magnet is and identify the north (N) and south (S) poles.</li> <li>I can identify magnetic and non-magnetic materials.</li> </ul> |



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|                                                              | <p>vegetables, protein, carbohydrates, dairy and fats and sugars.)</p> <ul style="list-style-type: none"><li>• I can explain what a balanced diet is.</li><li>• I can explain what the similarities and differences are between different diets.</li><li>• I can explain the differences between herbivores, carnivores and omnivores.</li></ul>                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>evaluate the results from my investigation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"><li>• I can explain how seeds are dispersed.</li><li>• I can explain the life cycle of a plant.</li></ul>                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>• I can evaluate the findings from my investigation. (Plant growth)</li><li>• I can explain what biodiversity is.</li><li>• I can explain the actions humans can take to increase biodiversity in the local area.</li></ul>                                                                                                                                                                                                                        |
| <p><b>Disciplinary knowledge: Working Scientifically</b></p> | <p><b>Asking questions</b><br/>I know how to ask questions about animal groups and understand there are different enquiry types I could use to answer them.<br/><b>Gather, record and classify data</b><br/>I know how to gather and record data about animal groups in different ways to help answer questions. I know how to record findings about the amount of protein in food using simple scientific language, drawings, labelled diagrams, bar charts, tables and pictograms.<br/><b>Present findings</b></p> | <p><b>Asking questions</b><br/>I know how to ask questions about the different types of rocks and understand there are different enquiry types I could use to answer them.<br/><b>Make observations</b><br/>I know how to begin to use scientific equipment to make observations about the properties of different rocks using hand held magnifiers.<br/><b>Gather, record and classify data</b><br/>I know how to gather and record data in different ways to help answer questions about the</p> | <p><b>Asking questions</b><br/>I know how to ask questions about fossils.<br/><b>Planning</b><br/>I can plan an experiment to identify which soil absorbs the most water.<br/><b>Present findings</b><br/>I know how to report on findings from enquiries about the absorbency of different soils including oral and written explanations. I can investigate which soil absorbs the most water and evaluate my findings from the experiment.<br/><b>Gather, record and classify data</b><br/>I know how to gather and record data in different ways to help answer</p> | <p><b>Make observations</b><br/>I know how to begin to use scientific equipment to make observations about shadow lengths. I can find patterns in the way that the size of shadows change.<br/><b>Gather, record and classify data</b><br/>I know how to gather and record data in different ways to help answer questions about shadow size. I know how to record findings about shadow lengths using simple tables.<br/><b>Asking questions</b><br/>I know how to ask questions about shadow lengths and understand there are</p> | <p><b>Answer questions and draw conclusions</b><br/>I know how to draw simple conclusions. I know how to use results, findings or observations to answer questions about plant growth, water transportation and pollination.<br/><b>Gather, record and classify data</b><br/>I can plan and set up an experiment to see whether the number of seeds within one plant pot affects the growth of the plants. I know how to gather and record data in different</p> | <p><b>Make observations</b><br/>I know how to begin to use scientific equipment to make observations, e.g. hand held magnifiers and tape measures. I can plan and carry out an experiment to investigate how the material on a ramp affects the distance a car travels. I can investigate and observe how magnets attract or repel each other and attract some materials and not others.<br/><b>Answer questions and make conclusions</b><br/>I know how to make simple conclusions.</p> |



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|  | <p>I know how to report on findings from enquiries including oral and written explanations.</p> <p><b>Answer questions and make conclusions</b></p> <p>I know how to draw simple conclusions about which foods are the healthiest.</p> <p>I know how to use results, findings or observations to answer questions animal groups.</p> | <p>properties of different types of rock.</p> <p>I know how to record findings about the different properties of rocks using simple scientific language, drawings and labelled diagrams.</p> | <p>questions about the absorbency of different soils.</p> <p>I know how to record findings about the absorbency of different soils using simple scientific language.</p> <p><b>Answer questions and make conclusions</b></p> <p>I know how to draw simple conclusions.</p> <p>I know how to use results, findings or observations to answer questions about the absorbency of different types of soil.</p> <p><b>Take measurements</b></p> <p>I know how to carry out tests and simple experiments about the absorbency of different types of soil and take measurements using standard units (ml).</p> | <p>different enquiry types I could use to answer them.</p> <p><b>Planning</b></p> <p>I can plan an experiment to investigate how the distance between the light source and the object affects the size of a shadow.</p> <p>I know how to make relevant predictions how the shadow length will change depending on where the torch is positioned.</p> <p>I know how to identify what I will change, observe and keep the same when investigating how the shadow length changes depending on where the torch is positioned.</p> <p>I know how to set up simple practical enquiries about shadow length, with support.</p> <p><b>Answer questions and make conclusions</b></p> <p>I know how to draw simple conclusions about how the shadow length changes depending on where the torch is positioned.</p> <p>I know how to use results, findings or observations to answer questions.</p> <p>I can investigate how the distance between the light source and the object affects the size of a shadow and evaluate the results from my investigation.</p> | <p>ways to help answer questions.</p> <p>I know how to record findings using simple scientific language, drawings and labelled diagrams.</p> <p><b>Asking questions</b></p> <p>I know how to ask questions about the requirements of plants for life and growth and understand there are different enquiry types I could use to answer them.</p> <p><b>Planning</b></p> <p>I know how to make relevant predictions about how water is transported within plants.</p> <p>I know how to identify what I will change, observe and keep the same.</p> <p>I know how to set up simple practical enquiries into how water is transported within plants, with support.</p> <p><b>Make observations</b></p> <p>I can investigate the way in which water is transported within plants.</p> <p>I know how to begin to use scientific equipment to make observations about how water is</p> | <p>I know how to use results, findings or observations to answer questions.</p> <p>I can evaluate the findings from my investigation. (Plant growth)</p> <p><b>Planning</b></p> <p>I know how to make relevant predictions about whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>I know how to identify what I will change, observe and keep the same.</p> <p>With support, I know how to set up simple practical enquiries to compare how things move on different surfaces.</p> <p><b>Gather, record and classify data</b></p> <p>I know how to gather and record data in different ways to help answer questions about magnets and forces.</p> <p>I know how to record findings using simple scientific language and drawings.</p> <p><b>Present findings</b></p> <p>I know how to report on findings from enquiries</p> |
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| <b>Key vocabulary</b>                                            | Nutrition, Skeleton, Femur, Pelvis, Spine, Skull, Ribcage, Muscles, Support, Protection, Exoskeleton                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Food waste, Rocks, Crystals, Grains, Layers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Fossil, Fossilisation, Soil, Organic matter, Deforestation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Light, Light sources, Natural light sources, Artificial light sources, Reflection, Opaque, Translucent, Transparent, Shadow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Leaf, Stem, Roots, Flower, Seed, Stamen, Pistil, Pollination, Seed dispersal, Germination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Force, Friction, Contact force, Magnet, Poles, Attract, Repel, Biodiversity, Endangered, Extinct                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Additional/ Cross Curricular and continuous opportunities</b> | <p>In DT Food units, types of diets will be recalled as well as the food groups that these ingredients come from.</p> <p>In PE lessons, children will be asked to recall key vocabulary from this unit and its importance in terms of their fitness and movement.</p> <p><u>Continuous opportunities</u></p> <ul style="list-style-type: none"> <li>Human Body Models / Skeleton Kits – children can explore and label skull, femur, pelvis, spine, and ribcage; compare human and animal skeletons.</li> <li>Animal Sorting and Classification Cards – hands-on sorting of animals by skeleton type</li> </ul> | <p>The pupils will use their mathematical skills and use a Venn diagram to sort and group the rocks.</p> <p><u>Continuous opportunities</u></p> <ul style="list-style-type: none"> <li>Food Waste Investigation Station – children can explore real or model food items, identify which could be wasted, and suggest ways to reduce waste in school.</li> <li>Sorting and Classification Cards for Food – images or models of different foods to discuss spoilage, shelf life and sustainability.</li> <li>Recycling / Composting Area – opportunities to practice separating waste and discuss</li> </ul> | <p>The learners will use their art skills (elements of art) to observe and draw a variety of fossils or draw a picture of what they think the animals looked like.</p> <p>Children will be asked to recall the meaning of deforestation when studying Biomes and Amazon units in geography.</p> <p><u>Continuous opportunities</u></p> <ul style="list-style-type: none"> <li>Fossil Handling and Exploration Station – children can examine real or replica fossils, explore fossil imprints in clay or salt dough and discuss how fossils are formed.</li> <li>Soil Investigation Area – samples of sand, clay, loam, and garden soil for children to touch, observe, and compare</li> </ul> | <p>The pupils will use their mathematical skills to measure the length of the shadow.</p> <p>They will create a bar chart of their results.</p> <p>Learners will revisit the vocabulary from this unit when they study drawing techniques and light and shade.</p> <p>As the seasons change, opportunities will be taken to review how the length of shadows change and recall the reasons for this.</p> <p><u>Continuous opportunities</u></p> <ul style="list-style-type: none"> <li>Light Source Exploration Station – torches, lamps, and natural sunlight (with safety guidance) for children to explore different light sources and discuss how the sun can be harmful.</li> </ul> | <p>The children will use their computing skills to create a stop-frame animation to explain how water is transported within plants.</p> <p>During Autumn, incidental opportunities will be taken to observe seed dispersal in action.</p> <p><u>Continuous opportunities</u></p> <ul style="list-style-type: none"> <li>Plant Dissection Station – real or model plants for children to dissect, identify and label roots, stem, leaves, flowers and reproductive parts.</li> <li>Labelled Diagram Area – posters, diagrams, and worksheets for children to match plant parts with their functions.</li> </ul> | <p>The children will use their mathematical skills to sort the magnetic objects and the non-magnetic objects into a sorting diagram.</p> <p><u>Continuous opportunities</u></p> <ul style="list-style-type: none"> <li>Ramp and Car Investigation Station – ramps with different surfaces, toy cars, and measuring tapes for children to explore how friction affects distance travelled.</li> <li>Friction and Force Exploration Area – materials like sandpaper, cloth, foil, and smooth boards for hands-on experimentation with how surfaces affect motion.</li> </ul> |



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| <p>(vertebrate/invertebrate, exoskeleton vs endoskeleton) and diet (herbivore, carnivore, omnivore).</p> <ul style="list-style-type: none"> <li>Interactive Skeleton Posters or Wall Charts – allow children to match bones to their functions and see similarities with other animals.</li> <li>Muscle Movement Stations – activities using elastic bands, pulleys, or simple models to show how muscles help bones move.</li> <li>Food Sorting / Nutrition Area – trays or boxes with pictures/models of fruits, vegetables, proteins, carbohydrates, dairy and fats/sugars for sorting activities.</li> <li>Balanced Diet Displays / Interactive Charts – children can build a plate of a balanced diet using cut-outs, food models, or digital apps.</li> <li>Investigation and Observation Journals – children can record</li> </ul> | <p>environmental impacts of food waste.</p> <ul style="list-style-type: none"> <li>Rock Collection / Handling Station – a variety of real or replica rocks for children to touch, observe, and sort based on properties (hardness, colour, texture, size).</li> <li>Magnifying Glasses / Hand Lenses – for close observation of rock features like grain, layers, or crystals.</li> <li>Rock Property Charts / Sorting Mats – children can classify rocks into types (igneous, sedimentary, metamorphic) or by properties.</li> <li>Reference Books / Interactive Tablets – age-appropriate rock identification guides and simple explanations of environmental issues caused by food waste.</li> <li>Investigation Journals / Recording Sheets – children can record their observations of rocks and reflections on reducing food waste.</li> </ul> | <p>texture, color and composition.</p> <ul style="list-style-type: none"> <li>Water Absorption Experiments – trays, beakers, and droppers to test how different soils absorb water, including opportunities to record observations and measure results.</li> <li>Magnifying Glasses / Hand Lenses – for close examination of soil particles, organic matter and small fossil fragments.</li> <li>Soil and Fossil Sorting Charts / Labels – mats for classifying soils and types of fossils, reinforcing observation and scientific vocabulary.</li> <li>Investigation Journals / Recording Sheets – for planning experiments, recording predictions, observations and conclusions about water absorption and soil properties.</li> <li>Reference Books / Digital Tablets – age-appropriate guides on fossils, soil types and their importance for plants and the environment.</li> <li>Practical Modelling Activities – creating layered soil models to</li> </ul> | <ul style="list-style-type: none"> <li>Shadow Investigation Area – objects of various shapes and materials for children to create and observe shadows.</li> <li>Measuring and Recording Materials – rulers, tape measures, and recording sheets for children to investigate how shadow size changes with distance.</li> <li>Transparent, Translucent and Opaque Materials Station – a selection of materials for children to test which cast shadows and which allow light to pass through.</li> <li>Magnifying Glasses / Hand Lenses – to observe details of shadow edges and the effect of light direction.</li> <li>Interactive Shadow Charts / Mats – visual aids to compare shadow lengths and shapes, reinforcing scientific vocabulary.</li> <li>Investigation Journals / Worksheets – to plan, predict, record results, and evaluate findings from shadow experiments.</li> <li>Reference Books / Digital Tablets – age-appropriate explanations on how we see, light travel and shadow formation.</li> </ul> | <ul style="list-style-type: none"> <li>Germination Investigation Station – seeds, soil, plant pots, and watering equipment for children to explore seed growth and factors affecting germination.</li> <li>Water Transport Models – celery or spinach in colored water to show how water moves through plants, or simple capillary action demonstrations.</li> <li>Pollination and Seed Dispersal Station – pictures, models, or interactive games showing pollen transfer, pollinators and different seed dispersal methods (wind, water, animals).</li> <li>Life Cycle Displays / Sequencing Mats – visual aids for children to arrange stages of plant life cycles and link reproduction, germination, growth and seed dispersal.</li> <li>Investigation Journals / Recording Sheets – for planning experiments, recording observations, and evaluating results, e.g., comparing seed</li> </ul> | <ul style="list-style-type: none"> <li>Magnetism Station – magnets for children to test objects, identify north and south poles, and classify magnetic and non-magnetic materials.</li> <li>Observation and Recording Area – worksheets, clipboards, and data tables for children to record experimental results and evaluate findings.</li> <li>Biodiversity Investigation Corner – magnifying glasses, identification guides, and trays for exploring plants and animals in the local environment.</li> <li>Habitat and Conservation Displays – pictures, models, and discussion prompts about ways humans can increase biodiversity, e.g., planting trees, creating bug hotels, or reducing pollution.</li> <li>Practical Investigation Journals – for planning experiments, recording observations, and reflecting on findings for both forces and biodiversity investigations.</li> </ul> |
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|                                                                                                                                                                                                          | <p>findings from comparing different diets or animal feeding habits.</p> <ul style="list-style-type: none"> <li>○ Roleplay / Small World Activities – e.g., setting up a “healthy café” to explore food groups and balanced meals.</li> <li>○ Reference Books / Digital Tablets – age-appropriate resources for looking up skeletons, muscles, nutrition and animal diets.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>○ Practical Demonstrations – e.g., dissolving chalk in vinegar to show rock properties, or roleplay “food waste detectives” to identify and suggest solutions.</li> </ul>                                                                                                                           | <p>show formation, or making fossil imprints in clay to understand the fossilization process.</p>                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>○ Practical Modelling Activities – building simple shadow theatres or using movable objects to explore how shadows change with distance and light angle.</li> </ul>                                                                                                                                                                                       | <p>growth in different conditions or densities.</p> <ul style="list-style-type: none"> <li>○ Reference Books / Digital Tablets – age-appropriate guides on plant anatomy, pollination, and seed dispersal.</li> <li>○ Practical Modelling Activities – creating plant life-cycle wheels, seed dispersal simulations, or growing different plants to compare growth and germination rates.</li> </ul> | <ul style="list-style-type: none"> <li>○ Reference Books / Digital Tablets – age-appropriate guides on forces, friction, magnetism and local ecosystems.</li> <li>○ Practical Modelling Activities – creating simple pulley and lever models, magnetic mazes, or mini biodiversity surveys in the outdoor environment.</li> </ul>                               |
|                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Each science lesson will start with a ‘Quick Quiz’ which will recall information taught in the last lesson, last week, two or three weeks ago and last term or last year.</li> <li>• Exit quizzes will be used as and when appropriate.</li> <li>• Wherever possible, a quick verbal quiz of scientific knowledge, e.g. lining up at the door, waiting to get their things for home time.</li> <li>• Teachers will display the vocabulary related to their particular units on their working wall as well as the types of enquiry so children can relate to this when completing activities in class as well as retrieval activities.</li> <li>• Vocabulary Bingo! Teachers to create bingo cards with science terms or concepts and call out definitions or descriptions. This could be used within science lessons or as a recall activity at an opportune time for the class teacher.</li> </ul> |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Commentary: Why are we teaching what we are teaching, in the order we are teaching it? What does each unit build on/prepare children for? How are resources and skills changing over time?</b></p> | <p><b>Skeletons</b><br/>Pupils look at skeletons as the first block in this unit as it is a relatable concept as the learners have prior knowledge about the different parts of the human body from Year 1. This unit also prepares them for work in Year 4 when looking at vertebrates and invertebrates as well as fossils in Year 6.</p> <p><b>Movement</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><b>Food waste</b><br/>In Year 1, the pupils will have looked at where their food comes from and how certain foods grow. They will also have explored different types of food in Year 2. In this sustainability block, learners will use their knowledge of food and nutrition to look at the impacts of food waste on planet Earth.</p> | <p><b>Fossils</b><br/>Pupils will use their knowledge of animal skeletons in unit 1 to help them understand the simple process of fossilisation. This unit also prepares them for work in Year 6 on fossils and then for KS3 where they continue to learn about fossils as evidence of past life and how they are formed as well as exploring different types of fossils.</p> | <p><b>Light</b><br/>This the first time that pupils have explored light and therefore they may have some common misconceptions about it and how it is produced which will need to be addressed. This will prepare the learners for their unit on space in Year 5 as well as their topic on light in Year 6. The pupils will also study a sustainability block in Year 6 which looks at light</p> | <p><b>Plants</b><br/>Plants has been split over two blocks to allow the time for plants to grow. Pupils have looked at soil and light before the plants topic and can use this unit to recap their knowledge. This unit is best suited to summer term to allow for maximum growth of plants. The learners will have looked at plants in Year 1 as well as bulbs</p>                                  | <p><b>Forces</b><br/>This unit is taught at the end of Year 3 as this concept is more abstract and complex for pupils to understand. In Year 2, learners looked at changing the shape of some objects through squashing, twisting, bending and stretching and now they will be introduced to forces for the first time. They will define forces simply as a</p> |



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|  | <p>This unit builds upon the pupils' prior knowledge from Year 1 where they learn about the human body. It also prepares them for their unit of work in Year 5 (Animals, including humans) where they will be looking at life cycles in humans. The skeletons and movement units also help learners as they progress to KS3 and learn more about the skeletal system and its role in movement.</p> <p><b>Nutrition and diet</b></p> <p>This builds on the learner's knowledge from Y2 about keeping healthy, naming and classifying foods and healthy and unhealthy diets. It prepares the pupils for their learning in Year 4 where they will look at the digestive system and the Year 6 unit on diet, drugs and lifestyle. This unit also prepares the learners as they move into KS3 where they learn about nutrition and diet as part of their science and food technology curriculum. This includes understanding the different food groups, the importance of a balanced diet, how it fuels the</p> | <p>This topic will also be explored again as the pupils progress into KS3 where they will learn about food waste and understand its environmental and social impacts, allowing learning to be retrieved and strengthened.</p> <p><b>Rocks</b></p> <p>The concepts introduced in the rocks unit are of increasing complexity. This has been split over three blocks so that children can recap and revise key knowledge. The learners will have explored rocks in the 'Materials' topics in Year 1 and 2. This unit also prepares pupils for units in Year 5 where they will look at properties of materials as well as reversible and irreversible changes. It will also help them with their work on fossils in Year 6. In KS3, pupils' knowledge of rocks from this unit will be built upon as they learn about the three main types of rocks – igneous, sedimentary and metamorphic – and how they are formed and transformed through the rock cycle. They also learn</p> | <p><b>Soils</b></p> <p>Learners have not studied soil before and, as a result, they may have a limited understanding of the key terms and the various types of soil. They will be able to apply this knowledge to the plants topic later in the year as well as to geography work in KS3 as they will learn about the composition, types and the importance of soil as well as the significance of soil for plant growth and water storage.</p> | <p>pollution and their knowledge on light will help them with this. In KS3, learners will continue to develop their knowledge of light extending their learning by investigating how light interacts with materials through absorption, reflection and transmission. They will also learn about shadows, the speed of light and the light spectrum.</p> | <p>and seeds in Year 2. This unit will help facilitate learning across KS2 Year groups as in Year 4, they will be grouping and classifying plants as well as looking at seasonal changes. They will also be looking at reproduction in plants in more detail in Year 5, and in Year 6 they will look at classifying plants as well as how plants have adapted. This unit will also prepare pupils for KS3 where they will learn about the fundamental aspects of plant life, including their needs, how they make their own food, how they reproduce and how they adapt to their environment.</p> | <p>push or a pull in the first instance and develop this knowledge to look at friction in more detail. This unit prepares pupils for the Year 5 unit on forces where they will again look at friction as well as air resistance, water resistance and gravity. The pupils will then be able to use their knowledge of gravity to help them with their unit on space. This unit prepares learners for KS3, where they continue to learn about forces as pushes or pulls that cause changes in motion or shape. They will also explore different types of forces, both contact and non-contact.</p> <p><b>Magnets</b></p> <p>This is taught at the end of Year 3 as this concept is more abstract and complex for pupils to understand. Having explored magnets and non-contact forces for the first time at this point, learners will then use and apply this knowledge in Year 5 when they look at properties of materials. In KS3, pupils will continue to learn about</p> |
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|  | body and the nutritional content of various foods. | about the properties of rocks, their uses and how they relate to the Earth's structure. |  |  |  | <p>magnets and magnetism, including concepts like magnetic poles, attraction and repulsion, magnetic fields and magnetic materials.</p> <p><b>Plants</b></p> <p>This unit is placed here, so the pupils can evaluate the results from their investigation from the previous plants unit. The amount of time between each unit should have allowed the plants to grow significantly to help the learners with their observations over time. This also allows for learning from the previous unit to be retrieved, helping it to stick.</p> <p><b>Biodiversity</b></p> <p>In this sustainability unit, the pupils will be introduced to the concept of 'biodiversity' building upon their KS1 learning about different plants, animals and how their habitats provide everything they need to survive. Pupils will learn how biodiversity can affect the range of different plants or animals that live within a habitat. This unit helps to</p> |
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| <b>Adaptations for LA pupils</b> | <ul style="list-style-type: none"> <li>• Pre-teach key vocabulary using labelled diagrams, word mats and visual prompts.</li> <li>• Use clear, simple diagrams and models to show the skeleton, muscles and digestive system concepts.</li> <li>• Break learning into small steps with frequent modelling and guided practice.</li> <li>• Provide structured sorting and matching activities (e.g. animal groups, diets, skeleton types).</li> <li>• Use hands-on activities where</li> </ul> | <ul style="list-style-type: none"> <li>• Pre-teach key vocabulary using visuals, simple definitions and real-life examples.</li> <li>• Use pictures, short videos and real objects (e.g. different foods or rock samples) to support understanding.</li> <li>• Break learning into small steps with clear modelling and repetition.</li> <li>• Provide structured sorting activities with clear categories (e.g. food waste vs not waste, rock types, properties).</li> </ul> | <ul style="list-style-type: none"> <li>• Pre-teach key vocabulary using pictures, simple definitions and word banks.</li> <li>• Use visual aids, real soil samples and diagrams to support understanding of fossils and soil formation.</li> <li>• Break learning into small, clear steps with regular modelling and repetition.</li> <li>• Provide sequencing activities (e.g. ordering stages of fossil formation).</li> <li>• Use structured sorting tasks for different soil</li> </ul> | <ul style="list-style-type: none"> <li>• Pre-teach key vocabulary using visuals, word banks and simple definitions.</li> <li>• Use practical demonstrations, videos and real-life examples to show light sources, shadows and reflection.</li> <li>• Break learning into small steps with clear modelling and repetition.</li> <li>• Provide hands-on investigations (e.g. making shadows with torches and objects).</li> <li>• Use structured sorting activities (e.g. light sources / not light</li> </ul> | <ul style="list-style-type: none"> <li>• Pre-teach key vocabulary using labelled diagrams, word banks and visual prompts.</li> <li>• Use real plants, videos and demonstrations to support understanding of plant structure and life cycles.</li> <li>• Break learning into small steps with clear modelling and repetition.</li> <li>• Provide hands-on activities such as plant dissection, labelling diagrams and sequencing life cycle cards.</li> </ul> | <ul style="list-style-type: none"> <li>• Pre-teach key vocabulary using visuals, word banks and simple definitions.</li> <li>• Use practical investigations and hands-on resources (e.g. ramps, toy cars, magnets, local habitat images).</li> <li>• Break learning into small steps with clear modelling and repetition.</li> <li>• Provide structured sorting activities (e.g. magnetic / non-magnetic materials, contact / non-contact forces).</li> </ul> |



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|                                  | <ul style="list-style-type: none"> <li>possible (e.g. labelling skeletons, sorting food items or picture cards).</li> <li>Encourage talk partners to discuss ideas before writing to support understanding and confidence.</li> <li>Provide sentence stems and word banks (e.g. "The function of the skull is...").</li> <li>Allow alternative ways of recording learning such as drawing, labelling, matching or oral explanation.</li> <li>Use repetition and recap activities to reinforce key scientific ideas regularly.</li> </ul>                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Use sentence stems and word banks to support explanations (e.g. "Food waste is...", "This rock is...").</li> <li>Encourage paired talk before writing to build confidence and understanding.</li> <li>Allow practical, hands-on activities such as sorting, grouping and investigating materials.</li> <li>Provide alternative recording methods such as drawing, labelling or matching instead of extended writing.</li> <li>Reinforce key ideas through recap games and retrieval practice.</li> </ul> | <ul style="list-style-type: none"> <li>types and their properties.</li> <li>Encourage paired talk before independent work to support understanding and confidence.</li> <li>Provide sentence stems and key words to scaffold explanations (e.g. "A fossil is...", "Soil is made from...").</li> <li>Allow alternative recording methods such as drawing, labelling, matching or oral explanation.</li> <li>Use recap and retrieval activities to reinforce key ideas frequently.</li> </ul> | <ul style="list-style-type: none"> <li>sources, materials that cast shadows).</li> <li>Provide sentence stems to support explanations (e.g. "A shadow is...", "Light comes from...").</li> <li>Encourage paired talk before recording ideas to build confidence and understanding.</li> <li>Allow alternative recording methods such as drawing, labelling or matching.</li> <li>Reinforce key concepts regularly through recap games and short retrieval activities.</li> </ul> | <ul style="list-style-type: none"> <li>Use scaffolded diagrams with partially labelled parts for pupils to complete.</li> <li>Encourage paired talk before writing to support understanding and confidence.</li> <li>Provide sentence stems and key words (e.g. "The function of the roots is...", "Pollination is...").</li> <li>Allow alternative recording methods such as drawing, labelling, matching or oral explanation.</li> <li>Use frequent recap and retrieval activities to reinforce key scientific vocabulary and processes.</li> </ul> | <ul style="list-style-type: none"> <li>Use sentence stems and key words to support explanations (e.g. "A force is...", "Friction is...").</li> <li>Encourage paired talk before recording ideas to support understanding and confidence.</li> <li>Allow alternative recording methods such as drawing, labelling, matching or oral explanation.</li> <li>Use real-life examples to support understanding of biodiversity and its importance.</li> <li>Reinforce key concepts through recap games and retrieval practice.</li> </ul> |
|                                  | <ul style="list-style-type: none"> <li>Use simplified language and focus on 1–2 ideas per lesson.</li> <li>Use flashcards and matching activities for recall, and break tasks into small, manageable steps with frequent checks for understanding.</li> <li>Use sentence stems to scaffold explanations and flashcards or guided worksheets to support recall.</li> <li>Use sentence stems to scaffold explanations and provide guided investigation templates with adult support.</li> <li>Break tasks into small, manageable steps with frequent checks for understanding.</li> <li>Break experiments, investigations and practical work into small, manageable steps with adult support and frequent checks for understanding and supported evaluation of results.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Adaptations for GD pupils</b> | <ul style="list-style-type: none"> <li>Encourage pupils to explain and justify <i>how structure</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Encourage pupils to explain the <i>cause and impact</i> of food</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>Encourage pupils to explain the <i>processes and</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>Encourage pupils to explain <i>how and why</i> light behaves in</li> </ul>                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Encourage pupils to explain <i>how and why</i> each part of a</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Encourage pupils to explain <i>how and why</i> different forces</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                   |



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|  | <p><i>relates to function</i> in the skeleton and muscles, not just name parts.</p> <ul style="list-style-type: none"> <li>• Use higher-order questioning (e.g. “Why is the skeleton important for survival?” “How do different animals’ skeletons help them adapt to their environment?”).</li> <li>• Challenge pupils to compare vertebrate and invertebrate structures, including exoskeletons, and explain evolutionary advantages.</li> <li>• Encourage pupils to classify animals using scientific reasoning and justify grouping choices.</li> <li>• Explore how different diets meet nutritional needs and evaluate the benefits and limitations of each.</li> <li>• Ask pupils to make links between diet, health, and lifestyle in different contexts and populations.</li> </ul> | <p>waste on the environment, economy and society, not just describe it.</p> <ul style="list-style-type: none"> <li>• Use higher-order questioning (e.g. “Why is reducing food waste important?” “What more could be done at school or in society?”).</li> <li>• Challenge pupils to evaluate different strategies for reducing food waste and justify which are most effective.</li> <li>• Encourage pupils to consider wider global issues such as sustainability, supply chains and environmental impact.</li> <li>• Use scientific reasoning to classify rocks based on observable properties and justify grouping decisions.</li> <li>• Explore how rock types are formed and how this affects</li> </ul> | <p><i>timescales</i> involved in fossil formation, not just describe what a fossil is.</p> <ul style="list-style-type: none"> <li>• Use higher-order questioning (e.g. “Why are fossils important for scientists?” “What can fossils tell us about the past?”).</li> <li>• Challenge pupils to compare different types of fossilisation and consider why some organisms are more likely to become fossils than others.</li> <li>• Encourage pupils to explain how soil composition affects plant growth, ecosystems and agriculture.</li> <li>• Explore how different soil types form and how properties (e.g. texture, drainage) impact their use.</li> <li>• Use scientific reasoning to classify and justify soil types based on evidence and observations.</li> <li>• Provide opportunities for independent enquiry, investigation and interpretation of</li> </ul> | <p>different ways, not just identify sources and effects.</p> <ul style="list-style-type: none"> <li>• Use higher-order questioning (e.g. “Why do some materials create clearer shadows than others?” “How does light travel from a source to our eyes?”).</li> <li>• Challenge pupils to predict and investigate changes in shadows (e.g. size, shape, direction) and explain the scientific reasons.</li> <li>• Explore how reflection enables vision, linking ideas of light sources, reflected light and sight.</li> <li>• Encourage pupils to use precise scientific vocabulary and explain concepts using cause and effect.</li> <li>• Investigate and compare different materials based on how they transmit, reflect or block light.</li> <li>• Provide opportunities for independent enquiry and practical investigation into light and shadow.</li> </ul> | <p>flowering plant is adapted to its function, not just label and describe.</p> <ul style="list-style-type: none"> <li>• Use higher-order questioning (e.g. “Why do plants need different methods of seed dispersal?” “How do environmental conditions affect plant growth?”).</li> <li>• Challenge pupils to link stages of the life cycle together, explaining how each stage leads to the next.</li> <li>• Explore and compare different methods of pollination and seed dispersal, evaluating their effectiveness in different environments.</li> <li>• Encourage pupils to explain processes such as germination and water transport using scientific reasoning and vocabulary.</li> <li>• Investigate how plants adapt to different habitats</li> </ul> | <p>affect motion, not just define them.</p> <ul style="list-style-type: none"> <li>• Use higher-order questioning (e.g. “Why does friction change on different surfaces?” “How do forces interact to change movement?”).</li> <li>• Challenge pupils to plan, carry out and evaluate investigations into variables affecting motion (e.g. ramp surface and distance travelled).</li> <li>• Encourage pupils to make predictions and justify them using scientific reasoning and evidence.</li> <li>• Explore magnetic forces in greater depth, including attraction, repulsion and strength at different distances.</li> <li>• Compare contact and non-contact forces and apply understanding to real-world examples.</li> <li>• Encourage pupils to classify materials</li> </ul> |
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|                             | <ul style="list-style-type: none"> <li>• Provide opportunities for independent enquiry into animal classification, food chains, and human nutrition.</li> <li>• Expect pupils to use precise scientific vocabulary and explain ideas using evidence and reasoning.</li> </ul>                                                                                                                                                                                                       | <p>their properties and uses.</p> <ul style="list-style-type: none"> <li>• Encourage pupils to compare and explain similarities and differences between rock types using scientific vocabulary.</li> <li>• Provide opportunities for independent enquiry, investigation and data-based conclusions.</li> </ul>                                                                                                                                                                                          | <p>soil and fossil evidence.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>and how their requirements may vary.</p> <ul style="list-style-type: none"> <li>• Provide opportunities for independent enquiry, including observation, dissection, and recording of plant structures and processes.</li> </ul>                                                                                                                                                                                                                                                                     | <p>using evidence and explain their reasoning scientifically.</p> <ul style="list-style-type: none"> <li>• Extend biodiversity learning by evaluating human impact on ecosystems and proposing evidence-based improvements to local habitats.</li> </ul>                                                                                                                                                                                                                                                           |
| <b>Resources/approaches</b> | <p>Rosenshine principles</p> <ul style="list-style-type: none"> <li>○ BBC Bitesize (KS2 Science – Human Body &amp; Nutrition) – explanations, diagrams, and interactive activities on the skeleton, muscles and food groups.</li> <li>○ Royal Institution / Science Museum – videos and interactive materials showing skeletons, muscles, and comparative anatomy of humans and animals.</li> <li>○ Oak National Academy – ready-made KS2 lessons on the human skeleton,</li> </ul> | <p>Rosenshine principles</p> <ul style="list-style-type: none"> <li>○ BBC Bitesize (KS2 Science – Rocks &amp; Environmental Awareness) – explanations and interactive content on rocks, their properties and food waste impacts.</li> <li>○ Oak National Academy – ready-made KS2 lessons on rocks, rock properties, classification and environmental impacts of food waste.</li> <li>○ Royal Institution/ Science Museum – videos and experiments demonstrating rock types, properties, and</li> </ul> | <p>Rosenshine principles</p> <ul style="list-style-type: none"> <li>○ BBC Bitesize (KS2 Science – Fossils &amp; Soil) – explanations and interactive content on fossil formation, soil types and their composition.</li> <li>○ Oak National Academy – ready-made KS2 lessons on fossils, soil types, and practical investigations.</li> <li>○ Royal Institution/ Science Museum – videos and experiments demonstrating fossil formation and soil properties.</li> <li>○ Practical resources / visuals (rock and soil samples, magnifying glasses, fossil replicas,</li> </ul> | <p>Rosenshine principles</p> <ul style="list-style-type: none"> <li>○ BBC Bitesize (KS2 Science – Light &amp; Shadows) – explanations and interactive content on light sources, how we see, shadows and sun safety.</li> <li>○ Oak National Academy – ready-made KS2 lessons on light, shadow formation and practical investigations.</li> <li>○ Royal Institution/ Science Museum – videos and experiments demonstrating light, shadow formation and safety with sunlight.</li> <li>○ Practical resources/ visuals (torches, opaque and transparent objects, white screens, rulers, light</li> </ul> | <p>Rosenshine principles</p> <ul style="list-style-type: none"> <li>○ BBC Bitesize (KS2 Science – Plants) – explanations, diagrams, and interactive content on plant parts, functions, life cycle, pollination, seed dispersal and germination.</li> <li>○ Oak National Academy – ready-made KS2 lessons on plant anatomy, germination, water transport, reproduction and life cycle experiments.</li> <li>○ Royal Institution/ Science Museum – videos and experiments demonstrating plant</li> </ul> | <p>Rosenshine principles</p> <ul style="list-style-type: none"> <li>○ BBC Bitesize (KS2 Science – Forces, Magnetism &amp; Ecology) – explanations and interactive content on forces, friction, magnets and biodiversity.</li> <li>○ Oak National Academy – ready-made KS2 lessons on forces, magnetism, evaluating experiments and promoting biodiversity.</li> <li>○ Royal Institution/ Science Museum – videos and practical demonstrations of friction, magnetic properties and ecological projects.</li> </ul> |



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|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <p>muscles, nutrition, and diet comparisons.</p> <ul style="list-style-type: none"> <li>○ Visuals / practical resources (skeleton models, bone replicas, food models, diagrams of muscles and animal skeletons) – to support hands-on learning and classification activities.</li> </ul>    | <p>sustainability topics like food waste.</p> <ul style="list-style-type: none"> <li>○ Practical resources / visuals (rock samples, magnifying glasses, classification charts, food waste posters, recycling and composting examples) – to support hands-on sorting, classification and discussion of environmental impact.</li> </ul> | <p>water measuring equipment) – to support hands-on investigation and experimental evaluation.</p>                                                                                                 | <p>meters) – to support hands-on investigations into shadows, size and distance effects.</p>                                              | <p>growth, pollination and seed dispersal.</p> <ul style="list-style-type: none"> <li>○ Practical resources / visuals (live or dissected plants, magnifying glasses, labelled diagrams, soil, pots, water, light sources) – to support hands-on investigation of plant parts, growth conditions and life cycle processes.</li> </ul> | <ul style="list-style-type: none"> <li>○ Practical resources / visuals (toy cars, ramps, different surfaces, magnets, magnetic/non-magnetic objects, local area biodiversity surveys) – to support hands-on experiments and environmental investigations.</li> </ul>                                                                                                                                                                           |
| <b>Career links</b> | <p>Scientist: Marie Curie<br/>Unit 1 careers:<br/>Radiographer<br/>Osteologist<br/>Archaeologist<br/>Orthopaedic Doctor</p> <p>Unit 2 careers:<br/>Physiotherapist<br/>Physical therapist<br/>Athlete</p> <p>Unit 3 careers:<br/>Dietician<br/>Chef<br/>Nutritionist<br/>Food scientist</p> | <p>Scientist: Anjana Khatwa<br/>Unit 4 careers:<br/>Food waste reduction specialist<br/>Sustainability manager/consultant<br/>Food technologist/product developer</p> <p>Unit 5 careers:<br/>Geologist<br/>Palaeontologist<br/>Mining Engineer</p>                                                                                     | <p>Scientist: Mary Anning<br/>Unit 6 careers:<br/>Palaeontologist<br/>Museum curator<br/>Geologist<br/>Archaeologist</p> <p>Unit 7 careers:<br/>Soil scientist<br/>Agronomist<br/>Soil analyst</p> | <p>Scientist: Percy Shaw<br/>Unit 8 careers:<br/>Electrician<br/>Lighting designer/technician<br/>Aerospace engineer<br/>Photographer</p> | <p>Scientist: Joseph Banks<br/>Unit 9 careers:<br/>Botanist<br/>Plant scientist<br/>Horticulturist<br/>Florist<br/>Farmer<br/>Groundskeeper</p>                                                                                                                                                                                      | <p>Scientist: William Gilbert<br/>Unit 10 careers:<br/>Mechanical engineer<br/>Aerospace engineer<br/>Civil engineer<br/>Physical therapist<br/>Wind Turbine Technician</p> <p>Unit 11 careers:<br/>Magnet design engineer<br/>Magnetic Levitation Engineer<br/>Mining engineer</p> <p>Unit 12 careers:<br/>Botanist<br/>Plant scientist<br/>Horticulturist<br/>Florist<br/>Farmer<br/>Groundskeeper</p> <p>Unit 13 careers:<br/>Ecologist</p> |



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|  |  |  |  |  |  | Conservation scientist<br>Wildlife biologist |
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