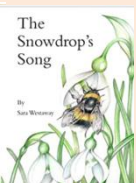
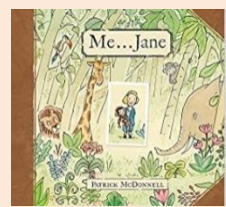
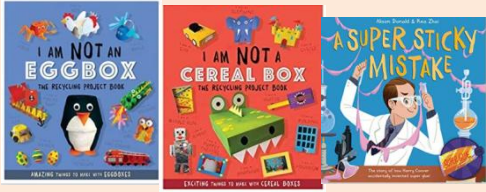
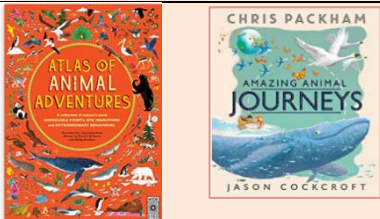
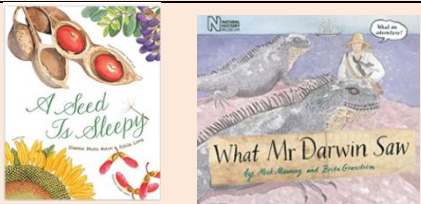


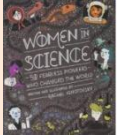
# Clifford Road Primary School Long Term Science

| Year 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                               |
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| Term 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Term 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Term 3                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Science</b><br><b>Physics: Seasonal changes</b> <ul style="list-style-type: none"> <li>Name the seasons and know about the type of weather in each season</li> <li>Observe and describe how day length varies across the seasons</li> <li>Observe changes in the seasons</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Science</b><br><b>Chemistry: Every day materials</b> <ul style="list-style-type: none"> <li>distinguish between an object and the material from which it is made</li> <li>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>describe the simple physical properties of a variety of everyday materials</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> | <b>Science</b><br><b>Biology: Animals, including humans</b> <ul style="list-style-type: none"> <li>Know the name of parts of the human body that can be seen</li> <li>Know about the five senses and link them with parts of the body</li> <li>Know and classify animals by what they eat (carnivore, herbivore and omnivore)</li> <li>Know how to sort by living and non-living things</li> <li>Know how to classify a range of animals by amphibian, reptile, mammal, fish and bird</li> </ul>                          | <b>Science</b><br><b>Biology: Plants</b> <ul style="list-style-type: none"> <li>Know and name a variety of common wild and garden plants</li> <li>Know and name the petals, stem, leaves and root of a plant</li> <li>Know and name the roots, trunk, branches and leaves of a tree</li> </ul>                                                                                |
| <b>Learning questions</b><br>What is the order of the seasons?<br>What season is it now and how do you know?<br>Can you explain in your own words what the seasons are?<br>What is your favourite season and why?<br>Are the four seasons the same in every country, what about in Iceland or Australia?                                                                                                                                                                                                                                                                                                                                                                                         | <b>Learning questions</b><br>What does the word material mean?<br>How many different materials can you name?<br>Which material do we have the most of in our classroom?<br>Can you list some things that are made out of plastic/wood/metal/rubber/glass?<br>Which materials can you see if we walk around our school grounds?<br>How can we classify materials [based on simple properties]?                                                                                                               | <b>Learning questions</b><br>A cat is an animal, a dog is an animal, a bird is an animal – are you an animal?<br>Can you name the different parts of the human body?<br>How do we [humans] use our five senses?<br>Where do animals like to live?<br>Can you say why some animals are called carnivores/ herbivores/ omnivores?<br>Can you help me make a list of some of the things that a carnivore/ herbivore/ omnivore would eat?<br>Do animals have ears? Can you see the ears of a blackbird, or a snake or a fish? | <b>Learning questions</b><br>Where do plants grow?<br>Can you make a list of all the plants that you know the names of (common, wild and/or garden plants)?<br>What plants can you see out of the [classroom] window?<br>Can you draw and label the main parts of a plant? – flower and tree (i.e. root, stem, leaves and flowers)?<br>What is your favourite flower and why? |
| <b>Working scientifically</b> <ul style="list-style-type: none"> <li>Ask questions such as:               <ul style="list-style-type: none"> <li>Why are flowers different colours?</li> <li>Why do some animals eat meat and others do not?</li> </ul> </li> <li>Set up a test to see which materials keeps things warmest, know if the test has been successful and can say what has been learned</li> <li>Explain to someone what has been learned from an investigation they have been involved with and draw conclusions from the answers to the questions asked</li> <li>Measures (within Year 1 mathematical limits) to help find out more about the investigations undertaken</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Text</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                          |
| <b>Retrieval</b> <ul style="list-style-type: none"> <li>In EYFS, the pupils will have named the four seasons at some stage</li> <li>They will have knowledge of months of the year linked to their birthdays</li> <li>They will almost certainly know that summer is a hot period and winter is generally cold</li> </ul>                                                                                                                                                                                                                                                                                                                                                                        | <b>Retrieval</b> <ul style="list-style-type: none"> <li>Pupils in EYFS will have explored a variety of resources that are made of different materials</li> <li>Most will be familiar with the name of the material, i.e. wood, glass, metal, etc.</li> </ul>                                                                                                                                                                                                                                                | <b>Retrieval</b><br>In EYFS children will have been taught nursery rhymes to include parts of the body, e.g. head, shoulders, knees and toes<br>They may have pets at home and will have observed what they eat<br>They will have come across a variety of animals but may not have classified them as in Year 1                                                                                                                                                                                                          | <b>Retrieval</b><br>In EYFS children will have grown plants from seeds<br>They will have observed plants and will know names such as leaf, flower, petal, etc.<br>Many children will have experienced local parks                                                                                                                                                             |
| <b>Key People and Places</b><br>UK, Iceland and Australia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Key People and Places</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Key People and Places</b><br>Jane Goodall                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Key People and Places</b>                                                                                                                                                                                                                                                                                                                                                  |

# Clifford Road Primary School Long Term Science

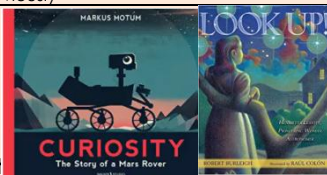
| Year 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>Science</b><br><b>Chemistry: Use of every day materials</b> <ul style="list-style-type: none"> <li>Know how materials can be changed by squashing, bending, twisting and stretching</li> <li>Know why a material might or might not be used for a specific job</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Science</b><br><b>Biology: Living things and their habitats</b> <ul style="list-style-type: none"> <li>Classify things by living, dead or never lived</li> <li>Know how a specific habitat provides for the basic needs of things living there (plants and animals)</li> <li>Match living things to their habitat</li> <li>Name some different sources of food for animals</li> <li>Know about and explain a simple food chain</li> </ul> | <b>Science</b><br><b>Biology: Plants</b> <ul style="list-style-type: none"> <li>Know and explain how seeds and bulbs grow into plants</li> <li>Know what plants need in order to grow and stay healthy (water, light &amp; suitable temperature)</li> </ul><br><b>Biology: Animals, including humans</b> <ul style="list-style-type: none"> <li>Know the basic stages in a life cycle for animals, (including humans)</li> <li>Know why exercise, a balanced diet and good hygiene are important for humans</li> </ul> |
| <b>Learning questions</b><br>Can you explain how you could change the shape of different materials?<br>Can you list some materials that can be squashed, stretched, twisted or bent?<br>Can you list some materials that cannot have their shape changed?<br>Which material would be best for building a house? Some houses are made from wood and others from bricks. Which material would you choose and why did you choose it?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Learning questions</b><br>What is a 'living' thing?<br>Can you name some different habitats of animals (or plants)?<br>Can you explain a micro-habitat and explain what it is?<br>Why do all food chains start with a plant?<br>What do you think might happen if the sun stopped shining?                                                                                                                                                | <b>Learning questions</b><br>Can you name some plants that grow from seeds?<br>Can you name some plants that grow from bulbs?<br>Can you describe what you would need to do to get a seed to grow?<br>Can you explain what plants need in order to grow and stay healthy?<br><br>Can you describe how humans change during their lifetime?<br>Can you explain why exercise, a balanced diet and good hygiene are important for humans?                                                                                 |
| <b>Working scientifically</b> <ul style="list-style-type: none"> <li>Ask questions such as:               <ul style="list-style-type: none"> <li>Why do some trees lose their leaves in Autumn and others do not?</li> <li>How long are roots of tall trees?</li> <li>Why do some animals have underground habitats?</li> </ul> </li> <li>Use equipment such as thermometers and rain gauges to help observe changes to local environment as the year progresses</li> <li>Use microscopes to find out more about small creatures and plants</li> <li>Know how to set up a fair test and do so when finding out about how seeds grow best</li> <li>Classify or group things according to a given criterion, e.g. deciduous and coniferous trees</li> <li>Draw conclusions from fair tests and explain what has been found out</li> <li>Use measures (within Year 2 mathematical limits) to help find out more about the investigations they are engaged with</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Text</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Retrieval</b> <ul style="list-style-type: none"> <li>Pupils will be familiar with windows being made of glass and many doors being made of wood. This unit helps them to consolidate much of the knowledge they carry around with them and helps them to consider why the materials they learned the names and properties of in Year 1 are being used</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Retrieval</b> <ul style="list-style-type: none"> <li>Most will be able to say what type of habitat their pets enjoy</li> <li>They will have noticed that squirrels spend a lot of time in trees and that other animals such as earthworms live in the ground</li> <li>They will know what type of food certain animals eat</li> </ul>                                                                                                     | <b>Retrieval</b> <ul style="list-style-type: none"> <li>Children will have recognised the importance of watering their plants and may have noticed the need for plants to have light and warmth</li> <li>In PE children will know the importance of exercise on a healthy body</li> <li>They will also have made a healthy snacks in food tehnology</li> </ul>                                                                                                                                                         |
| <b>Key People and Places</b><br>Harry Coover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Key People and Places</b><br>Chris Packham/ David Attenborough                                                                                                                                                                                                                                                                                                                                                                            | <b>Key People and Places</b><br>Charles Darwin                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

# Clifford Road Primary School Long Term Science

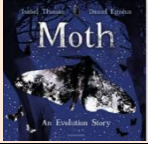
| Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| Term 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Term 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Term 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Science</b><br><b>Chemistry - rocks</b> <ul style="list-style-type: none"> <li>Compare and group rocks based on their appearance and physical properties, giving reasons</li> <li>Know how soil is made and how fossils are formed</li> <li>Know about and explain the difference between sedimentary, metamorphic and igneous rock</li> </ul> <b>Biology- Animals, including humans</b> <ul style="list-style-type: none"> <li>Know about the importance of a nutritious, balanced diet</li> <li>Know how nutrients, water and oxygen are transported within animals and humans</li> <li>Know about the skeletal and muscular system of a human</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Science</b><br><b>Physics – forces and magnets</b> <ul style="list-style-type: none"> <li>Know about and describe how objects move on different surfaces</li> <li>Know how a simple pulley works and use to on to lift an object</li> <li>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</li> <li>Know about and explain how magnets attract and repel</li> <li>Predict whether magnets will attract or repel and give a reason</li> </ul> | <b>Science</b><br><b>Physics – light</b> <ul style="list-style-type: none"> <li>Know that dark is the absence of light</li> <li>Know that light is needed in order to see and is reflected from a surface</li> <li>Know and demonstrate how a shadow is formed and explain how a shadow changes shape</li> <li>Know about the danger of direct sunlight and describe how to keep protected</li> </ul> <b>Biology – plants</b> <ul style="list-style-type: none"> <li>Know the function of different parts of flowing plants and trees</li> <li>Know how water is transported within plants</li> <li>Know the plant life cycle, especially the importance of flowers</li> </ul> |
| <b>Learning questions</b><br>How many different rocks can you name?<br>Which type of rock do you think would be best to make a statue and can you explain why you would choose it?<br>What is soil made from?<br>Can you explain how fossils are formed?<br>Can you list some rocks that are sedimentary, metamorphic and igneous?<br><br>How many different food groups can you name?<br>Can you explain how nutrients, water and oxygen are transported within humans and animals?<br>What are skeletons for? Can you explain why the skeleton is so important?<br>What are muscles? Can you explain what they do?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Learning questions</b><br>Can you name some different types of forces?<br>Can you explain how pulley works?<br>Can you make a list of some materials that are attracted to a magnet?<br>Can you make a list of some materials that are magnetic?<br>How are magnets useful for separating materials for recycling?<br>Can you explain how magnets attract and repel each other?                                                                                                                                                                     | <b>Learning questions</b><br>Can you explain why it gets dark?<br>How is a shadow formed?<br>At what time of day would you expect shadows to be<br>a) the longest?<br>b) the shortest?<br>How would you protect yourself on a sunny day?<br><br>Can you create a diagram and label it to explain the function of different parts of plants and trees?<br>How do roots help a plant to stay alive?<br>Can you explain how new plants are formed?<br>What is your favourite tree and why?                                                                                                                                                                                        |
| <b>Working scientifically</b> <ul style="list-style-type: none"> <li>Ask questions such as:               <ul style="list-style-type: none"> <li>Why does the moon appear as different shapes in the night sky?</li> <li>Why do shadows change during the day?</li> <li>Where does a fossil come from?</li> </ul> </li> <li>Observe at what time of day a shadow is likely to be at its longest and shortest</li> <li>Observe which type of plants grow in different places e.g. bluebells in woodland, roses in domestic gardens, etc.</li> <li>Use research to find out how reflection can help us see things that are around the corner</li> <li>Use research to find out what the main differences are between sedimentary and igneous rocks</li> <li>Test to see which type of soil is most suitable when growing two similar plants</li> <li>Test to see if their right hand is as efficient as their left hand</li> <li>Set up a fair test with different variables e.g. the best conditions for a plant to grow</li> <li>Explain to a partner why a test is a fair one e.g. lifting weights with right and left hand, etc.</li> <li>Measure carefully (taking account of mathematical knowledge up to Year 3) and add to scientific learning</li> <li>Use a thermometer to measure temperature and know there are two main scales used to measure temperature</li> <li>Gather and record information using a chart, matrix or tally chart, depending on what is most sensible</li> <li>Group information according to common factors e.g. plants that grow in woodlands or plants that grow in gardens</li> <li>Use bar charts and other statistical tables (in line with Year 3 mathematics statistics) to record findings</li> <li>Know how to use a key to help understand information presented on a chart</li> <li>Be confident to stand in front of others and explain what has been found out, for example about how the moon changes shape</li> <li>Present findings using written explanations and include diagrams when needed</li> <li>Make sense of findings and draw conclusions which help them to understand more about scientific information</li> <li>Amend predictions according to findings</li> <li>Be prepared to change ideas as a result of what has been found out during a scientific enquiry</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Text</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Text</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Text</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Retrieval</b> <ul style="list-style-type: none"> <li>Most pupils will have handled a variety of rocks at different stages of their lives to date.</li> <li>They may have started to recognise the difference between the rounded pebbles found on beaches and the sharper rocks found inland</li> <li>In Years 1 and 2, rocks or stone will have been amongst the materials they will have looked at</li> <li>In addition, pupils will know about soil because most will have made mud pies or cakes at some stage, or grown plants</li> <li>Pupils should know the names of parts of plants</li> <li>Know how seeds and bulbs grow and know what a plant needs to be healthy</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Retrieval</b> <ul style="list-style-type: none"> <li>All pupils will have experience of dark, light and shadows</li> <li>Most will have been aware that the sun plays an important role in all of these aspects</li> <li>Most will know about the need to put sun-cream on when their bodies are exposed to sunshine, and most will have at some stage worn sunglasses</li> <li>Many will have noticed that the moon is not always the same shape in the sky</li> </ul>                                                                             | <b>Retrieval</b> <ul style="list-style-type: none"> <li>Pupils will almost certainly have experienced moving different objects over different surfaces. This is likely to have happened from EYFS onwards</li> <li>They may well have met magnets before, but may not have understood why objects move towards them</li> <li>Pupils should know the names of parts of plants</li> <li>Know how seeds and bulbs grow and know what a plant needs to be healthy</li> </ul>                                                                                                                                                                                                       |
| <b>Key People and Places</b><br>Mary Anning was an English fossil collector<br>Margaret Lowman – leaf detective! (rainforest)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Key People and Places</b><br>Aristotle was aware that the moon shines by reflecting light from the sun and was aware of the spherical shape of the earth because of the circular shadow it cast on the moon during an eclipse                                                                                                                                                                                                                                                                                                                       | <b>Key People and Places</b><br>Maria Sibylla Merian                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Year 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p><b>Science</b></p> <p><b>Physics: electricity</b></p> <ul style="list-style-type: none"> <li>Identify common appliances that require electricity to function</li> <li>Construct a series circuit</li> <li>Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers)</li> <li>Predict and test whether a lamp will light within a circuit</li> <li>Know the function of a switch</li> <li>Know the difference between a conductor and an insulator; giving examples of each</li> </ul> <p><b>Biology: Animals, including humans</b></p> <ul style="list-style-type: none"> <li>Identify and name the parts of the human digestive system</li> <li>Know the functions of the organs in the human digestive system</li> <li>Identify and know the different types of human teeth</li> <li>Know the functions of different human teeth</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Science</b></p> <p><b>Physics: Sound</b></p> <ul style="list-style-type: none"> <li>Know how sound is made, associating some of them with vibrating</li> <li>Know how sound travels from a source to our ears</li> <li>Know the correlation between pitch and the object producing a sound</li> <li>Know the correlation between the volume of a sound and the strength of the vibrations that produced it</li> <li>Know what happens to a sound as it travels away from its source</li> </ul> | <p><b>Science</b></p> <p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>Group materials based on their state of matter (solid, liquid, gas)</li> <li>Know the temperature at which materials change state</li> <li>Know about and explore how some materials can change state</li> <li>Know the part played by evaporation and condensation in the water cycle</li> </ul> <p><b>Biology Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>Use classification keys to group, identify and name living things</li> <li>Know how changes to an environment could endanger living things</li> <li>Use and construct food chains to identify producers, predators and prey</li> </ul> |
| <p><b>Learning questions</b></p> <p>Can you make a list of everyday appliances that need electricity to work?<br/>Can you explain how a switch works?<br/>Why would you put a switch in a circuit?<br/>What materials would you need to make up a simple circuit?<br/>What material would be the safest to use as an insulator to cover electrical wires? Can you make a list of insulators?<br/>What does it mean when we say a material conducts electricity? Which materials conduct electricity?<br/>Can you make a list of the main parts of the human digestive system?<br/>Why do we have a digestive system? Can you explain how the digestive system works?<br/>Can you explain why the liver is so important in the digestive system?<br/>Can you explain why humans have different shaped teeth and what they are used for?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>Learning questions</b></p> <p>Can you explain how a sound is made?<br/>Which part of the ear detects sound waves?<br/>How does the tension of a drum skin affect pitch?<br/>Can you explain how to change the volume of a sound?<br/>Can you explain what happens to a sound the further it gets from its source?</p>                                                                                                                                                                          | <p><b>Learning questions</b></p> <p>Can you make a list of materials that are solids or liquids?<br/>Why is powdered chalk more like a liquid than a lump of chalk?<br/>Name two solids that do not dissolve in water?<br/>Name a liquid used in the home that is a solution.<br/>Can you explain where rain comes from?</p> <p>Can you explain what a classification key is used for?<br/>What would happen to a living thing if it's environment changed?<br/>Can you explain what a food chain is for?<br/>Can you explain the difference between producers, predators and prey?</p>                                                                                                                                            |
| <p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>Ask questions such as: <ul style="list-style-type: none"> <li>Why are steam and ice the same thing?</li> <li>Why is the liver important in the digestive systems?</li> <li>What do we mean by 'pitch' when it comes to sound?</li> </ul> </li> <li>Use research to find out how much time it takes to digest most of our food</li> <li>Use research to find out which materials make effective conductors and insulators of electricity</li> <li>Carry out tests to see, for example, which of two instruments make the highest or lowest sounds and to see if a glass of ice weighs the same as a glass of water</li> <li>Set up a fair test with more than one variable e.g. using different materials to cut out sound</li> <li>Explain to others why a test that has been set up is a fair one e.g. discover how fast ice melts in different temperatures</li> <li>Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning</li> <li>Use a data logger to check on the time it takes ice to melt to water in different temperatures</li> <li>Use a thermometer to measure temperature and know there are two main scales used to measure temperature</li> <li>Gather and record information using a chart, matrix or tally chart, depending on what is most sensible</li> <li>Group information according to common factors e.g. materials that make good conductors or insulators</li> <li>Use bar charts and other statistical tables (in line with Year 4 mathematics statistics) to record findings</li> <li>Present findings using written explanations and include diagrams, when needed</li> <li>Write up findings using a planning, doing and evaluating process</li> <li>Make sense of findings and draw conclusions which helps them understand more about the scientific information that has been learned</li> <li>When making predictions there are plausible reasons as to why they have done so</li> <li>Able to amend predictions according to findings</li> <li>Prepared to change ideas as a result of what has been found out during a scientific enquiry</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><b>Text</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>Text</b></p>                                                                                                                                                                                                                                                                                                                                                                                               | <p><b>text</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>Retrieval</b></p> <ul style="list-style-type: none"> <li>Although this is the first time that pupils will formally have met electricity in the science curriculum, pupils will have knowledge of electricity through their daily life. For example, most will have used a switch to light up a room, will know what a plug looks like and will have toys and gadgets operated by battery</li> <li>Some may have experimented with lighting up a small electric bulb (using a simple circuit)</li> <li>Pupils have learned what makes up a nutritious, balanced diet and the role of the skeleton and muscles</li> <li>They learned about the importance of exercise and hygiene</li> <li>Almost all pupils will know approximately where their stomachs are and will have some knowledge of what happens to the food we digest</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Retrieval</b></p> <ul style="list-style-type: none"> <li>Although this is the only time we meet sound in the primary science curriculum, pupils will have come across sound as part of their music lessons</li> <li>The vast majority will know from the work on senses in Year 1 that our ears are linked to sound</li> <li>Most will have experienced using a sound system for music at home and at school</li> </ul>                                                                        | <p><b>Retrieval</b></p> <ul style="list-style-type: none"> <li>Most pupils will have seen the steam coming from a kettle that's boiling.</li> <li>Most will know that water turns to ice when we put it into the freezer.</li> <li>Most will have seen windows steam up and droplets of water run down those windows.</li> <li>Link with water cycle in geography.</li> <li>This needs to be linked with the classification learning pupils did in Year 1</li> <li>In addition, pupils need to link with the Year 2 unit on habitats which was about looking at animals having suitable habitats for basic needs</li> </ul>                                                                                                        |
| <p><b>Key People and Places</b></p> <p>Edith Clarke<br/>Michael Faraday</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Key People and Places</b></p> <p>Ernst Chladni</p>                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Key People and Places</b></p> <p>Jane proctor<br/>David Attenborough</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

# Clifford Road Primary School Long Term Science

| Year 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| Term 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Term 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Term 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Science</b><br><b>Chemistry: Properties and changes of materials</b> <ul style="list-style-type: none"> <li>Compare and group materials based on their properties, e.g. hardness, solubility transparency, conductivity, [electrical &amp; thermal], and response to magnets</li> <li>Know and demonstrate how some materials can be separated, e.g. through filtering, sieving and evaporating</li> <li>Know and explain how a material dissolves to form a solution</li> <li>Know and show how to recover a substance from a solution</li> <li>Know and demonstrate that some changes are reversible and some are not</li> <li>Know how some changes result in the formation of a new material and that this is usually irreversible</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Science</b><br><b>Physics: Earth and space</b> <ul style="list-style-type: none"> <li>Know about and explain the movement of the Earth and other planets relative to the Sun</li> <li>Know about and explain the movement of the Moon relative to the Earth</li> <li>Know and demonstrate how night and day are created</li> <li>Describe the Sun, Earth and Moon (using the term spherical)</li> </ul> <b>Physics: Forces</b> <ul style="list-style-type: none"> <li>Know what gravity is and its impact on our lives</li> <li>Identify and know the effect of air and water resistance</li> <li>Identify and know the effect of friction</li> <li>Explain how levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul>                                                                            | <b>Science</b><br>A school trip to support this visit- Dunwich Heath<br><b>Biology plants</b> <ul style="list-style-type: none"> <li>Know the process of reproduction in plants</li> </ul> <b>Biology Animals including humans</b> <ul style="list-style-type: none"> <li>Know the life cycle of different living things e.g. mammal, amphibian, insect and bird</li> <li>Create a timeline to indicate stages of growth in humans</li> <li>Know the differences between different life cycles</li> <li>Know the process of reproduction in animals</li> </ul>                                   |
| <b>Learning questions</b><br>How do you know if something has dissolved?<br>When a solid doesn't dissolve in water can you explain how you could separate from the water?<br>Can you explain what happens to the solid in a solution if the liquid is evaporated?<br>Can you list some factors could affect the speed at which different materials dissolve in water?<br>Can you explain how to separate a mixture of pebbles, sand and salt? What would you use?<br>Can you make a list of as many reversible changes as you can?<br>Can you explain how you know that a change is irreversible? What do you need to look out for?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Learning questions</b><br>How long does it take for the earth to spin round once on its axis?<br>How long does it take for the moon to orbit the earth?<br>How are night and day created?<br>What shape are the Sun, Earth, and Moon?<br><br>What is gravity? How does it impact our lives?<br>What is the effect of air resistance on an object moving through the air?<br>What is the effect of water resistance on an object as it moves through water?<br>Can you explain how levers, pulleys and gears work and the effect they have?                                                                                                                                                                                                                                                                                     | <b>Learning questions</b><br>Can you make a list of plants that are wind or insect pollinated?<br>Can you describe different how different plants reproduce?<br>Can you draw a diagram to show the life cycle of your favourite mammal, amphibian, insect or bird?<br>Can you draw a timeline to show the main stages of growth in humans?<br>What are the four main stages in the life cycle of all animals? Can you explain how the life cycle of amphibians and most insects is different to that of the other main animal groups?                                                            |
| <b>Working scientifically</b> <ul style="list-style-type: none"> <li>Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not</li> <li>Set up a fair test when needed e.g. which surfaces create most friction?</li> <li>Set up an enquiry based investigation e.g. find out what adults / children can do now that they couldn't when a baby</li> <li>Know what the variables are in a given enquiry and can isolate each one when investigating e.g. finding out how effective parachutes are when made with different materials</li> <li>Use all measurements as set out in Year 5 mathematics (measurement), including capacity and mass</li> <li>Use other scientific instruments as needed e.g. thermometer, rain gauge, spring scales (for measuring Newtons)</li> <li>Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs</li> <li>Make predictions based on information gleaned from investigations</li> <li>Create new investigations which take account of what has been learned previously</li> </ul> <ul style="list-style-type: none"> <li>Able to present information related to scientific enquiries in a range of ways including using IT</li> <li>Use diagrams, as and when necessary, to support writing</li> <li>Is evaluative when explaining findings from scientific enquiry</li> <li>Clear about what has been found out from recent enquiry and can relate this to other enquiries, where appropriate</li> <li>Their explanations set out clearly why something has happened and its possible impact on other things</li> <li>Able to give an example of something focused on when supporting a scientific theory e.g. how much easier it is to lift a heavy object using pulleys</li> <li>Keep an on-going record of new scientific words that they have come across for the first time</li> <li>Able to relate causal relationships when, for example, studying life cycles</li> <li>Frequently carry out research when investigating a scientific principle or theory</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Text</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Text</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Text</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Retrieval</b> <ul style="list-style-type: none"> <li>Pupils will have carried out some comparisons of the properties of materials already in key stage 1 and Year 3. This needs to be retrieved before moving on to this unit</li> <li>In EYFS pupils may have experienced filtering and sieving sand</li> <li>Food technology may have introduced pupils to sieving</li> <li>The disappearance of puddles on the playground may well be something that is worth retrieving before this unit begins</li> <li>Most pupils will have eaten or even made toast. They will be aware that the toast cannot be a piece of bread once again</li> <li>They will also have seen eggs being transformed from within their shell to the fried egg or scrambled egg that ends up on our plates</li> <li>Burning paper is another example that pupils will be familiar with. They know that once burned the material will not be paper again</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Retrieval</b> <ul style="list-style-type: none"> <li>In key stage 1, pupils will often have touched on space and used books like 'The Man in the Moon' to stimulate further interest</li> <li>In Year 3, the unit on light and dark considers the moon's relationship with the Sun and the Earth</li> <li>In addition, pupils will know that the amount of the moon we see changes</li> <li>Retrieve the information from the Y3 science unit on light and dark, in the first instance</li> <li>There are links to the forces learning in Year 3 but there are likely to be more appropriate links with experimenting with parachutes using a small pieces of cloth linked to heavy weight at home</li> <li>Most will have seen huge cranes lift up heavy objects, especially if they live close to a building site</li> </ul> | <b>Retrieval</b> <ul style="list-style-type: none"> <li>Most pupils will have grandparents and even great grandparents and will have noticed their movements are slower and they may be susceptible to more illnesses than themselves</li> <li>They may also have regular contacts with young babies and will have noticed what they can and cannot do</li> <li>Pupils learned about basic stages of life cycles in Year 2</li> <li>Pupils will need to retrieve information on plant life cycles and the function of different parts of plants from Year 3 to help them in this unit</li> </ul> |
| <b>Key People and Places</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Key People and Places</b><br>Henrietta Leavitt<br>Isaac Newton<br>Wang Zhenyi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Key People and Places</b><br>Rachel Carson<br>Maria Merian (1647 - 1717) life cycle of a butterfly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

# Clifford Road Primary School Long Term Science

| Year 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| <b>Science</b><br><b>Physics: Light</b> <ul style="list-style-type: none"> <li>Know how light travels</li> <li>Know and demonstrate how we see objects</li> <li>Know why shadows have the same shape as the object that casts them</li> <li>Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.</li> </ul> <b>Biology: Animals including humans</b> <ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system</li> <li>Know the function of the heart, blood vessels and blood</li> <li>Know the impact of diet, exercise, drugs and lifestyle on health</li> <li>Know the ways in which nutrients and water are transported in animals, including humans</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               | <b>Science</b><br><b>Physics: Electricity</b> <ul style="list-style-type: none"> <li>Compare and give reasons for why components work and do not work in a circuit</li> <li>Draw circuit diagrams using correct symbols</li> <li>Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer</li> </ul> <b>Biology: Living things and their habitats</b> <ul style="list-style-type: none"> <li>Classify living things into broad groups according to observable characteristics and based on similarities and differences</li> <li>Know how living things have been classified</li> <li>Give reasons for classifying plants and animals in a specific way</li> </ul> | <b>Science</b><br><b>Biology: Evolution and inheritance</b> <ul style="list-style-type: none"> <li>Know how the Earth and living things have changed over time</li> <li>Know how fossils can be used to find out about the past</li> <li>Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)</li> <li>Know how animals and plants are adapted to suit their environment</li> <li>Link adaptation over time to evolution</li> <li>Know about evolution and can explain what it is</li> </ul> |
| <b>Learning questions</b><br>Can you explain how light travels?<br>Can you explain how we are able to see things?<br>What are the factors that could change a shadow?<br>Can you explain why a shadow has the same shape as the object that cast it?<br>How do a periscope/telescope/magnifying glass/mirror work?<br><br>Can you name the main parts of the human circulatory system?<br>Can you explain the importance of the heart/blood vessels/blood?<br>What affects your heart rate? Can you explain the impact of exercise on your heart rate?<br>Can you explain how nutrients and water are transported around the body in animals including humans?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Learning questions</b><br>Can you explain why an electrical circuit might fail?<br>How can you name the symbols of electrical components in circuit diagrams?<br>How can you change the brightness of the lamp or the volume of a buzzer?<br>Why are wires usually covered with plastic?<br>What would happen if the world ran out of batteries?<br><br>Can you explain what classification means?<br>Can you make a list of different ways of classifying living things?<br>Can you explain the reasons for classifying a particular plant or animal in its unique habitat?                                                                                                                                             | <b>Learning questions</b><br>How do we know about living things that have lived in the past?<br>Can you explain how fossils might be used to find out about the past?<br>Are all siblings of living things identical?<br>Can you describe an adaptation of a particular animal or plant to its environment?<br>What must all living things be able to do in order to survive?<br>Can you explain what evolution is?                                                                                                                                             |
| <b>Working scientifically</b> <ul style="list-style-type: none"> <li>Know which type of investigation is needed to suit particular scientific enquiry e.g. looking at the relationship between pulse and exercise</li> <li>Set up a fair test when needed e.g. does light travel in straight lines?</li> <li>Know how to set up an enquiry based investigation e.g. what is the relationship between oxygen and blood?</li> <li>Know what the variables are in a given enquiry and can isolate each one when investigating</li> <li>Justify which variable has been isolated in scientific investigation</li> <li>Use all measurements as set out in Year 6 mathematics (measurement), including capacity, mass, ratio and proportion</li> <li>Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs</li> <li>Make accurate predictions based on information gleaned from their investigations and create new investigations as a result</li> <li>Able to present information related to scientific enquiries in a range of ways including IT</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Text</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Text</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Text</b><br>                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Retrieval</b> <ul style="list-style-type: none"> <li>Although there are several links to the light and dark unit in Year 3, most will be familiar with torches and will be aware of changes in shadows during the day</li> <li>They will know that dark is the absence of light and that it is dangerous to look directly at the sun</li> <li>Many will be aware that spectacles help people see better because of magnification, etc.</li> <li>Some will have used binoculars at some stage</li> <li>Having found out about what happens to our food in Year 4 and how we move in Year 3, this helps to link to the work of our heart and the circulatory system within this unit</li> <li>Pupils will know about the colour of our blood and about the approximate position of our hearts in the body</li> <li>Links to PE and DT support pupils deeper understanding of the main issues in this unit</li> </ul>                                                                                                                                                                                                                                      | <b>Retrieval</b> <ul style="list-style-type: none"> <li>There are links with the Year 4 unit on electricity to explore in the first instance</li> <li>Most pupils will know of the dangers associated with electricity</li> <li>They will also be aware of sustainable power and may have come across wind turbines across our landscapes</li> <li>Many will have changed batteries in their toys and may have some awareness of positive and negative terminals</li> <li>Pupils need to recall knowledge on classifying animals from Years 1 and 4</li> <li>It is very important that the link is made otherwise this unit can be challenging for many pupils</li> </ul>                                                   | <b>Retrieval</b> <ul style="list-style-type: none"> <li>Many pupils will be able to talk about people in their families that look alike</li> <li>There are also links to the Year 5 unit on how the body changes from birth to death</li> <li>Many pupils may have discussed the possibility that humans may have evolved from primates</li> </ul>                                                                                                                                                                                                              |
| <b>Key People and Places</b><br>Isaac Newton – prisms splitting light<br>Henry Fox Talbot – camera<br>Galileo - telescope                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Key People and Places</b><br>Edison vs Telsa<br>Carolus (Carl) Linnaeus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Key People and Places</b><br>Charles Darwin and the Galapagos Islands<br>Mary Anning (revisited)                                                                                                                                                                                                                                                                                                                                                                                                                                                             |