

**Our Curricular Goal: To increase pupils' knowledge and understanding of our world, and develop skills associated with Science as a process of enquiry. We intend to achieve this by fostering a natural curiosity in the children, encourage respect for living things and physical environment as well as providing opportunities for critical evaluation of evidence**

EYFS

Key Stage 1

Lower Key Stage 2

Upper Key Stage 2

**Working Scientifically**

Scientific enquiry and investigational learning, developing predictions and conclusions should be taught, learned and developed throughout all primary learning from EYFS to Year 6. Planning and carrying out a fair test should be seen within each unit from KS1 to KS2 with progression from teacher led to independent, student led in Class 4.

<p><b>Working Scientifically</b></p>	<p>End of FS I can: -</p> <p>Answer how and why questions about experiences</p> <p>Choose resources needed for activities</p> <p>Make observations and talk about why things occur and change</p> <p>Talk about what they see using a wide range of vocabulary (UtheW 3-4)</p> <p>Explore how things work U the W 3-4</p>	<ul style="list-style-type: none"> <li>Ask questions such as: <i>Why are flowers different colours? Why do some animals eat meat and others do not? How does a plant grow? What is the best material for a fireman's bucket?</i></li> <li>Set up tests and work scientifically and 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> <li>Use magnifying glasses for observations E.g. in comparing and contrasting plants and in observing in detail the structure of a plant and comparing and contrasting animals.</li> </ul>	<ul style="list-style-type: none"> <li>Ask questions such as: <i>Why do some trees lose their leaves in Autumn and others do not? How long are roots of tall trees? Why do some animals have underground habitats? Which seed grows best? Is a flame alive? Is a deciduous tree dead?</i></li> <li>Use equipment such as thermometers and rain gauges to help observe changes to local environment/seasons as the year progresses. E.g. collecting rainfall in different seasons.</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 trees according to a given criteria e.g. deciduous and coniferous trees</li> <li>Draw conclusions from fair tests and explain what has been found out</li> </ul>	<ul style="list-style-type: none"> <li>Ask questions such as: <i>Why do shadows change during the day? Where does a fossil come from? What is the role of the different plant structures in nutrition and support? How are seeds dispersed? Do different plants need different conditions to grow? What affects plant growth?</i></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 plan 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> </ul>	<ul style="list-style-type: none"> <li>Ask questions such as: <i>Why are steam and ice the same thing? Why is the liver important in digestive systems? What do we mean by 'pitch' when it comes to sound? Do different sized saucepans create different sounds?</i></li> <li>Use research to find out how much time it takes to digest most of our food</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 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</li> </ul>	<ul style="list-style-type: none"> <li>Ask questions such as Why do shadows change shape during the day?</li> <li>Set up an investigation when it is appropriate, for example, finding out which materials dissolve or not</li> <li>Set up a fair test when needed, for example, which surfaces create most friction?</li> <li>Know what the variables are in a given enquiry and can isolate each one when investigating, for example, 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, for example, thermometer, rain gauge, spring scales,</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> <li>Able to present information related to scientific enquiries in a range of ways including using IT such as powerpoint</li> </ul>	<ul style="list-style-type: none"> <li>Know which type of investigation is needed to suit particular scientific enquiry, for example, 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, for example, 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 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 such as presentations, movies, including using IT such as powerpoint,</li> <li>Use a range of written methods to report findings, including focusing</li> </ul>
--------------------------------------	---	---	---	---	--	---	---

		<ul style="list-style-type: none"> <li>• Sing songs to learn vocabulary e.g. body parts</li> <li>• To make tables and charts of observations e.g. weather and seasonal change</li> <li>• Find out about the work of scientists e.g. Anders Celsius,</li> </ul>	<ul style="list-style-type: none"> <li>• Use measures (within Year 2 mathematical limits) to help find out more about the investigations they are engaged in</li> <li>• Find out about the work of scientists e.g. John Dunlop</li> </ul>	<ul style="list-style-type: none"> <li>• Measure carefully (taking account of mathematical knowledge up to Year 3) and add to scientific learning</li> <li>• Use a thermometer to measure 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 mathematical 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 processes e.g. wind dispersal</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 scientific enquiry</li> <li>• Find out about the work of scientists e.g. Mary Anning</li> </ul>	<ul style="list-style-type: none"> <li>• Present findings using written explanations and include diagrams, when needed</li> <li>• Write up findings when 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 learned</li> <li>• When making predictions that 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> <li>• Find out about the work of scientists e.g. Alexander Graham-Bell</li> </ul>	<ul style="list-style-type: none"> <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 related this to other enquires, 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, for example, 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>• Frequently carry out research when investigating a scientific principle or theory</li> <li>• Find out about the work of scientists e.g. Jane Goodall, David Attenborough, Spencer Silver, Arthur Fry, Mae Jemison, Daniel Gabriel Fahrenheit,</li> </ul>	<p>on the planning doing and evaluating phases</p> <ul style="list-style-type: none"> <li>• Clear about what has been found out from their enquiry and can relate this to others in class</li> <li>• Explanations set out clearly why something has happened and its possible impact on other things</li> <li>• Aware of the need to support conclusions with evidence</li> <li>• Keep an on-going record of new scientific words that they have come across for the first time and use these regularly in future scientific write ups</li> <li>• Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class</li> <li>• Able to give an example of something they have focused on when supporting a scientific theory, for example, classifying vertebrate and invertebrate creatures or why certain creatures choose their unique habitats</li> <li>• Frequently carry out research when investigating a scientific principle or theory</li> <li>• Find out about the work of scientists e.g. Charles Darwin and Carl Linnaeus</li> </ul>
--	--	--	---	---	--	--	--

# Biology

Understanding the World	Animals, including humans (basic classification)	Animals, including humans	Animals, including humans	Animals, including humans	Animals, including humans	Animals, including humans	Animals, including humans				
<ul style="list-style-type: none"> <li>Understand the key features of the life cycle of an animal – butterfly – U the W 3-4</li> <li>Begin to understand the need to respect and care for the natural environment and all living things. U the W 3-4</li> <li>Know and talk about different factors that support their overall health and wellbeing including healthy eating and basic hygiene (PSED links)</li> <li>Manage their own needs personal hygiene – summer 1</li> <li>Know and talk about different factors that support their overall health and wellbeing: regular physical activity healthy eating, toothbrushing, sensible amounts of screentime, having a good sleep routine, being a safe pedestrian – autumn 2</li> </ul>	<ul style="list-style-type: none"> <li>Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds</li> <li>Know and classify animals by what they eat (carnivore, herbivore and omnivore)</li> <li>I can compare the structure of different common animals</li> </ul> <p style="text-align: center;"><u>Animals, including humans (the human body)</u></p> <ul style="list-style-type: none"> <li>Know the names of parts of the human body that can be seen</li> <li>Know the five senses</li> </ul>	<ul style="list-style-type: none"> <li>Know the basic stages of growth in a life cycle for animals, including humans</li> <li>Know why exercise, a balanced diet and good hygiene are important to humans</li> <li>Know what is needed for animals and humans to survive</li> </ul>	<ul style="list-style-type: none"> <li>Know about the importance of a nutritious, balanced diet</li> <li>Know how to design a healthy meal</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> <li>Know how to group animals with and without a skeleton</li> </ul>	<ul style="list-style-type: none"> <li>Identify and name the parts of the human digestive system (mouth, tongue, teeth, oesophagus, stomach, small and large intestine)</li> <li>Know the functions of the main parts of human digestive system</li> <li>Identify and know the different types of human teeth</li> <li>Know the functions of different human teeth</li> <li>Know how to look after their teeth</li> <li>Use and construct food chains to identify producers, predators and prey</li> </ul>	<ul style="list-style-type: none"> <li>Know the changes as humans develop from birth to old age</li> <li>Create a timeline to indicate stages of growth in humans</li> <li>Know the changes experienced during puberty</li> <li>Know how to research to find out the gestation periods of other animals and make comparisons</li> </ul>	<ul style="list-style-type: none"> <li>Know and name the main parts of the 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>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know a variety of common wild and garden plants including evergreen and deciduous trees</li> <li>Know and name the seed, flowers, fruit, petals, stem, leaves and root of a plant</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <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 and suitable temperature)</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know the functions of different parts of flowering plants and trees</li> <li>Know how water is transported within plants</li> <li>Know what plants need to grow and how this varies in different plants</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know how seed dispersal ensures new plants survive</li> <li>Know how nutrients are taken in through plant roots</li> <li>Know that leaves use light to make food for the plant</li> <li>Know how keys are a way of identifying living things, including plants</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know how seed dispersal ensures new plants survive</li> <li>Know how nutrients are taken in through plant roots</li> <li>Know that leaves use light to make food for the plant</li> <li>Know how keys are a way of identifying living things, including plants</li> </ul>
<ul style="list-style-type: none"> <li>Plant seeds and care for growing plants U the W 3-4 – Spring 2</li> <li>Begin to understand the need to respect and care for the natural environment and all living things. U the W 3-4 – Spring 2</li> <li>Begin to understand the need to respect and care for the natural environment and all living things U the W 3-4 – Spring 2</li> <li>Explore the World Around Them –R – (Seasons all year)</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know a variety of common wild and garden plants including evergreen and deciduous trees</li> <li>Know and name the seed, flowers, fruit, petals, stem, leaves and root of a plant</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <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 and suitable temperature)</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know the functions of different parts of flowering plants and trees</li> <li>Know how water is transported within plants</li> <li>Know what plants need to grow and how this varies in different plants</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know how seed dispersal ensures new plants survive</li> <li>Know how nutrients are taken in through plant roots</li> <li>Know that leaves use light to make food for the plant</li> <li>Know how keys are a way of identifying living things, including plants</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know how seed dispersal ensures new plants survive</li> <li>Know how nutrients are taken in through plant roots</li> <li>Know that leaves use light to make food for the plant</li> <li>Know how keys are a way of identifying living things, including plants</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know how seed dispersal ensures new plants survive</li> <li>Know how nutrients are taken in through plant roots</li> <li>Know that leaves use light to make food for the plant</li> <li>Know how keys are a way of identifying living things, including plants</li> </ul>	<p style="text-align: center;"><u>Plants</u></p> <ul style="list-style-type: none"> <li>Know how seed dispersal ensures new plants survive</li> <li>Know how nutrients are taken in through plant roots</li> <li>Know that leaves use light to make food for the plant</li> <li>Know how keys are a way of identifying living things, including plants</li> </ul>				

	<ul style="list-style-type: none"> <li>• Begin to use identification sheets to help identify trees in the school environment</li> <li>• Explore the World Around Them –R – (Hibernation Autumn)</li> <li>• Explore the World Around Them –R – (Arctic Habitats - Spring)</li> </ul>	<ul style="list-style-type: none"> <li>• Know and name the roots, trunk, branches and leaves of a tree</li> </ul>	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> <li>• Know if something is living, dead or never lived</li> <li>• Know how to sort by living and non-living things</li> <li>• Know how a specific habitat, is suitable for the basic needs of living things there (plants and animals)</li> <li>• Know the names of plants and animals in their habitats, including micro-habitats</li> <li>• Name some different sources of food for animals</li> <li>• Know about and explain a simple food chain</li> </ul>	<ul style="list-style-type: none"> <li>• Know the plant life cycle and why flowers are important</li> <li>• Know how plants reproduce through seed formation and dispersal, wind dispersal and pollination</li> </ul>	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> <li>• Know how to use classification keys to group, identify and name living things locally – trees - and in the wider environment</li> <li>• Know how changes to an environment could endanger living things</li> </ul>	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> <li>• Know the life cycles of different living things :mammal, amphibian, insect and bird</li> <li>• Know and compare the differences between the different life cycles</li> <li>• Know the process of reproduction in plants: sexual and asexual reproduction</li> <li>• Know the process of sexual reproduction in animals</li> </ul>	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> <li>• Know how to classify living things into broad groups according to <u>observable</u> characteristics and based on similarities and differences: microorganisms/plants/animals</li> <li>• Know how living things have been classified</li> <li>• Give reasons for classifying plants and animals in a specific way</li> <li>• Know how to classify a broad range of unfamiliar animals and plants from varied habitats in the classification system</li> </ul> <p><u>Evolution and Inheritance</u></p> <ul style="list-style-type: none"> <li>• Know how the Earth and living things have changed over time</li> <li>• Know about evolution and can explain what it is</li> <li>• Know how fossils can be used to find out about the past</li> <li>• Know that living things produce offspring and know 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> </ul>
--	---	---	--	---	--	---	---



						• Know adaptation over time leads to evolution
<p><b>Commentary</b></p> <p>Closely linked units taught at the same time in each class, where possible, throughout the year for close monitoring of topic and overview of progression – Animals including humans across the whole school/Plants</p>	<p>Children will begin to identify leaf shapes of trees in the school grounds and use books and identification sheets to identify the species in the area. This is taught in Term 3 when a wider range of deciduous trees are in bloom and as the classification identifying is a more challenging skill so taught later in the year.</p> <p>Children have the opportunity to hatch out butterflies and watch the developmental stages, this is built upon in KS1 where the life cycle of a frog is observed and then later in UKS2 when the life cycle of hens are observed with hatching chickens.</p> <p>The children begin their learning about plants with a focus on growing things from seed and observing growth alongside the need to respect and nurture living things. This is an important understanding which is built on over the KS1 teaching of plants and living things and their habitats.</p> <p>The children build upon and develop their previous knowledge of habitats from hibernation in Term 1 by looking at a variety of animals in the polar regions. The children will develop their knowledge of different animals and how they adapt to their environment which enables them to use and apply scientific language. This work is done as it builds up from the work on changes as children have the understanding of what changes are from their observations of seasonal change.</p> <p>Healthy me is taught in Autumn term so initial understanding skills can be developed over the year and enables hygiene routines and pedestrian safety skills to be established from the offset. These skills are further developed in PSHE during the summer term.</p>	<p><b>Year A</b></p> <p>Y1 Plants taught Term 2 to be able to view deciduous and evergreen plants/trees and observe how deciduous plants/trees change during Term 2 and 3. It also builds on the learning of things that are dead, alive or have never been alive from Living Things and their habitat in Term 1.</p> <p>Y2 Animals including humans taught Term 3 so can observe the life cycle of a frog – observing the changes from frogspawn to frog! This builds on prior learning from Living things and their habitat taught earlier in the year – Term 1 and learning in EYFS about the life cycle of a butterfly and the habitats of animals living in the Arctic.</p> <p><b>Year B</b></p> <p>Y2 Plants is taught Term 2 to observe how plants grow from bulbs planted in October (crocus). And to grow sunflowers from seeds to observe growth in order to explain how plants grow giving time to observe in Term 3 also. This builds from EYFS of showing care and concern as children plant and look after their own seeds/bulbs/plants.</p> <p>Y1 Animals including humans put in Term 3 to aid children in being able to access the more challenging vocabulary of classification of animals: amphibians, fish, reptiles, birds and mammals. Also, the vocabulary of animal diets: carnivores, herbivores and omnivores. Use of a full term as the unit refers to animals and humans and therefore more time to look at both areas.</p> <p>Plants is taught in YA Term 2 to enable us to observe and identify growth and development of a variety of plants during Spring and to compare seasonal changes from Autumn as we revisit this.</p>	<p><b>Year A</b></p> <p>Y3 Plants in Term 2 so mustard seeds can be planted to observe the formation of seeds – approximately 60 days.</p> <p>Y3 Plants unit builds on prior learning in KS1, Year A, where parts of the plants are identified and so children are able to build on this and learn about the functions of different parts of the plants.</p> <p>This unit builds on learning in LKS2. Children have been introduced to simple food chains.</p> <p>In LKS2 children learn about different types of nutrition, what is healthy and what is not healthy and that humans cannot create their own food (Year A). This unit links into work on the human body learning about teeth and the digestive system of humans and animals (Year B) and vice versa.</p> <p>The Y3 Animals Including Humans unit builds on the Y2 Unit of Living things and their habitat in LKS2 Year A, where children identify the basic needs for survival (water, food and air) and prepares children for the Year 3 learning about the right types of nutrition and that humans can't create their own food.</p> <p><b>Year B</b></p> <p>Y4 Living things and their habitats focus on classifying trees allowing progression from KS1 where children classify whether things have lived, have never lived and are alive, and prepares for continuation of classification in Y6 where the focus is on plant classification.</p> <p>The Y4 Animals Including Humans unit taught in Year B, Term 3, builds on learning in KS1 about simple food chains and introduces the vocabulary knowledge of producer, predator and prey. It also builds on learning in EYFS and KS1 about human body parts, developing this to the functions of internal organs in the digestive system.</p> <p>Y3 Animals including humans learning about a healthy diet links in further teaching in both years in DT food units where food design is also linked to healthy options.</p> <p>Children have already been introduced to seasons and hours of light/dark during the day in Key Stage 1 and will build on this in learning about shadows.</p>	<p><b>Year A</b></p> <p>In the Living Things and their habitats unit, Year 6/ Year A, children build on learning in LKS2 about skeletons in the human body as well as that of different animals. This enables the progression of learning about classifying common vertebrates and invertebrates.</p> <p>The Animals Including Humans unit, Year 6/Year A, builds well on the learning in LKS2 about nutrition and links very well with the body system learning about the digestive system in KLS2, Year 4/Year B by developing the understanding of body systems to the human circulatory system. Children will already have an understanding and vocabulary to support their further investigating of humans and animals. Their knowledge of skeletons from LKS2 and its protection of internal organs will aid children in their understanding.</p> <p>The life cycle of a hen is observed with the hatching of chicks which builds on hands on observations of life cycles of insects (butterfly) in EYFS and amphibians (Frog) in KS1 moving to birds in UKS2 (chicks)</p> <p><b>Year B</b></p> <p>Y5 Living things and their habitats in Term 1 Year so can plant daffodils, observe growth and discover plant reproduction by bulb division in Term 3.</p> <p>The evolution and inheritance unit builds on LKS2 learning about rocks where knowledge of rock formation is developed as children learn about what we can learn about evolution from fossils.</p> <p>Animals including humans units are taught at the end of each year to allow for the continuation from this to Sex Education provision to Year 6 pupils during this final half term.</p>		

# Chemistry

	<p><u>Understanding the World</u></p> <ul style="list-style-type: none"> <li>• explore materials of everyday objects U the W 3-4</li> <li>• know similarities and differences in relation to natural materials indoors and outside U the W 3-4</li> <li>• use all their senses in hands-on exploration of natural materials U the W 3-4</li> <li>• explore a variety of materials...experimenting with different properties U the W 0-3</li> <li>• Talk about the differences between materials and changes they notice</li> <li>• Explore the World Around Them –R – (Seasons all year)</li> </ul>	<p><u>Everyday Materials</u></p> <ul style="list-style-type: none"> <li>• Know the name of the materials an object is made from</li> <li>• Know about some properties of everyday materials: hard/soft, stiff/stretchy, shiny/dull, rough/smooth, waterproof/not waterproof</li> <li>• Know the names of everyday materials: wood, plastic, glass, metal</li> <li>• Compare and group everyday materials on their properties</li> </ul>	<p><u>Everyday Materials and their uses</u></p> <ul style="list-style-type: none"> <li>• Know why a material might or might not be suitable for a specific job/purpose</li> <li>• Know how some materials can be changed by squashing, bending, twisting and stretching</li> </ul>	<p><u>Rocks</u></p> <ul style="list-style-type: none"> <li>• Know how to compare and group rocks based on their appearance and physical properties, giving reasons</li> <li>• Know how soil is made</li> <li>• Know how fossils are formed</li> </ul>	<p><u>Materials: States of Matter</u></p> <ul style="list-style-type: none"> <li>• Know whether materials are solids, liquids or gases and be able to group them</li> <li>• Know that heating and cooling can change the state of a material (water) and at what temperature this happens °C</li> <li>• Know about and explore how some materials can change state</li> <li>• Know how evaporation and condensation work in the water cycle</li> <li>• Know how temperature effects the rate of evaporation</li> </ul>	<p><u>Materials: Properties and changes in materials</u></p> <ul style="list-style-type: none"> <li>• Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, electrical, thermal) and response to magnets</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 how some materials can be separated (e.g. through filtering, sieving and evaporating)</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> <li>• Know the reasons for uses of particular everyday materials (metal, wood, plastic)</li> <li>• To know the important work of scientists to create new, useful materials</li> </ul>	
--	---	---	--	---	--	---	--

				<ul style="list-style-type: none"> <li>• Know about and explain the difference between sedimentary, metamorphic and igneous rocks</li> <li>• Know how to use a hand lens, microscope or APP to identify rock types in the local environment</li> </ul>			
--	--	--	--	--	--	--	--

Commentary	<p>This learning forms a solid foundation of understanding what materials are and comparing natural and man-made materials for the teaching of materials in KS1 where children build on the knowledge to develop the properties of materials. This is then extended to more scientific terms of conductivity, insulator, magnetism properties in LKS2 and the different states of matter of materials, and then into properties of materials that are developed physically and chemically in UKS2.</p>	<p><b>Year A</b></p> <p>Teaching the materials units at the start of each year enables children to build on their skills of sorting into skills of classification in Living things and their habitats Y2 in Year A and Animals including Humans Y1 in Year B.</p> <p>In Year A, Year1, Everyday Materials is taught at the same time as the Great Fire of London to link an investigation into the best material to make a fireman's bucket.</p> <p>The units taught about materials in both years prepare children for their learning in LKS2 where they will build upon their knowledge of the properties of materials to learn about the different states of matter.</p>	<p><b>Year A</b></p> <p>The Rocks unit, Year 3, Year B, links back to KS1 learning about properties of materials and builds on previous scientific vocabulary. It is taught in Term 3 as it can be quite conceptually demanding. It builds on prior learning about plants in KS1 and Year 3, Year A, if taught previously.</p> <p><b>Year B</b></p> <p>The yearly teaching of materials starting from EYFS should allow pupils to be ready for a more scientific development into states of matter and enable scientific enquiry into how materials change state and how temperature affects this. Children should be well placed to learn the more complex concepts of evaporation and condensation.</p>	<p><b>Year A</b></p> <p><b>Year B</b></p> <p>By UKS2 the children should have a firm understanding of materials, their properties, features and uses. They will build on the knowledge gained in LKS2 on evaporation and condensation and use scientific enquiry to create solutions, separate solutions and investigate reversible and irreversible changes.</p> <p>The properties and changes of matter unit is taught over a full term to allow time for building scientific enquiry and investigative learning. It is also placed after learning about electricity so the properties of electrical conductors can be used as a classification..</p>
------------	--	---	---	---

**Physics**

	<ul style="list-style-type: none"> <li>• Make observations about the 4 seasons and talk about why things occur and change</li> <li>• Describe what they see, hear and feel whilst outside – Autumn/Spring/Summer</li> <li>• Understand the effect of changing seasons on the natural world around them</li> </ul>	<p><u>Seasonal Change</u></p> <ul style="list-style-type: none"> <li>• Know and name the four seasons</li> <li>• Know and describe the changes over the four seasons</li> <li>• Know and describe how weather changes over the seasons</li> <li>• Know in the UK the daylight length is longer in the summer, than in the winter</li> </ul>				
--	---	---	--	--	--	--

		<ul style="list-style-type: none"> <li>Children know not to look directly at the sun</li> </ul>		<p style="text-align: center;"><u>Forces</u></p> <ul style="list-style-type: none"> <li>Know about and describe how objects move on different surfaces</li> <li>Know how some forces require contact and some do not, giving examples</li> <li>Know about and explain how magnets attract and repel and have 2 pole</li> <li>Predict whether magnets will attract or repel and give a reason</li> <li>Know how to compare and group everyday materials that are magnetic or not and identify magnetic materials</li> </ul> <p style="text-align: center;"><u>Light</u></p> <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 size</li> <li>Know about the danger of direct sunlight and describe how to keep protected</li> </ul>	<p style="text-align: center;"><u>Electricity</u></p> <ul style="list-style-type: none"> <li>Identify and name appliances that require electricity to function</li> <li>Know how to construct a series circuit and draw pictorially</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> </ul>	<p style="text-align: center;"><u>Forces</u></p> <ul style="list-style-type: none"> <li>Know and explain what gravity is and its impact on our lives</li> <li>Identify and know the effect of air resistance</li> <li>Identify and know the effect of water resistance</li> <li>Identify and know the effect of friction</li> <li>Know through investigating how levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul>	<p style="text-align: center;"><u>Light</u></p> <ul style="list-style-type: none"> <li>Know how light travels</li> <li>Know how objects are seen</li> <li>Know and demonstrate how we see objects</li> <li>Know why shadows have the same shape as the object that cast them</li> <li>Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc</li> </ul> <p style="text-align: center;"><u>Electricity</u></p> <ul style="list-style-type: none"> <li>Know and compare why components work and do not work in a circuit</li> <li>Draw circuit diagrams for simple circuits 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>
--	--	---	--	--	---	--	---



				<ul style="list-style-type: none"> <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 style="text-align: center;"><u>Sound</u></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</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 style="text-align: center;"><u>Earth and Space</u></p> <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> <li>• Know the Sun is a star at the centre of our solar system and it has 8 planets</li> <li>• Know a moon is a celestial body that orbits a planet</li> <li>• Know that it is not safe to look directly at the sun</li> </ul>		
Commentary	Seasonal change is observed throughout the year so that similarities and differences and change can be observed over the school year. The changes in	Year A	Y1 Seasonal Changes taught in Term 1 in order to set up diaries of yearly observation of a tree/plants within the school grounds for seasonal	Year A	The unit of Sound, Year 4/Year A, is taught during Term 1 to establish scientific enquiry skills and exploration of fair testing, how to set up their	Year A	The learning about shadows being formed when light from a source is blocked is developed through the Earth and Space unit, Year 5, Year A when children can investigate the changes of shadows.

	<p>weather and temperatures are observed. The children will relate the seasons and weather to their Class Bear creating a class diary for the Bear observing seasonal change and choosing appropriate clothes to dress the Bear.</p>	<p>change and also to observe weather change over the year, possibly recorded as a whole class weather chart.</p> <p>In Nursery and Reception, the children have discussed the various types of weather. They will have also started the terminology such as the seasons. We will build on knowledge and exposure/experience of particular seasons such as winter – snow and other discussions.</p> <p style="text-align: center;">Year B</p> <p>Children will further their learning in the Year 2 Living Things and their Habitats unit where they will be looking at habitats and how they can differ during seasonal changes.</p>	<p>own tests and to test their own conclusions. It is a shorter unit which allows time for lots of scientific enquiry.</p> <p style="text-align: center;">Year B</p> <p>The Forces and Magnets unit, Year 3/Year B, is taught in Term 1 as it forms a good basis for exploration of States of Matter taught in Term 2. (Material comparisons give a sound basis of solids.)</p> <p>The Light unit, Year 3, Year B, builds on the introduction to seasons and hours of light/dark during the day in KS1 and progresses into learning about shadows and forms an introduction to light for further development in UKS2.</p>	<p>The secure understanding about seasons and seasonal change developed in KS1 will enable pupils to understand the more difficult concepts of knowing why the Earth has seasons.</p> <p>The forces unit is taught after earth and space to build on learning of Gravitational pull towards the centre of the earth. Concepts of friction, gravity, air resistance and water resistance build on earlier learning in LKS2 on pushes, pulls and magnetic forces. The unit enables plenty of scientific enquiry and investigation skills within Term 1.</p> <p>In UKS2 the Light unit, Year 6, Year A, builds on prior learning in LKS2 about needing light in order to see and that light is reflected off surfaces.</p> <p style="text-align: center;">Year B</p> <p>The electricity unit builds on previous learning in LKS2 where circuit drawings can progress to symbols knowledge. Prior knowledge and understanding allows for more scientific enquiry focus in this topic area in UKS2.</p>
--	--	---	---	--