

## Progression of Milestones in Science

	Plants	Living Things and Their habitats	Animals including Humans	Energy	Materials & Changes	Environment	Earth and Space	
Rec	<p><b>Autumn 1</b> I know how to plant seeds and look after them.</p> <p><b>Autumn 1(CL) Working Scientifically -</b> I can use and understand 'why' questions. I can start a conversation with an adult or a friend and continue it for many turns. I can use talk to organise myself and play. I can engage in story times. I can learn new vocabulary. I can ask questions to find out more and to check I understand what has been said to me.</p> <p><b>Autumn 2</b> I know how trees change in winter.</p> <p><b>Autumn 2 (CL) Working Scientifically</b> I can talk about stories to build understanding. I can listen to and talk about non-fiction books. I can use new vocabulary. I can say my views. I can connect one idea or action to another using a range of connectives. I can make observations of change.</p> <p><b>Spring 2</b> I know some parts of a plant.</p> <p><b>Spring 2(CL) Working Scientifically</b> I can describe events in some detail. I can use talk to help work out problems and organise thinking and activities. I can use talk to explain how things work and why they might happen. To know and use new vocabulary in discussions and play. I can work in a small group, class and one-to-one discussions, offering my own ideas, using recently introduced vocabulary.</p>	<p><b>Autumn 1</b> I can use my senses to describe what I notice on an autumn walk.</p> <p><b>Autumn 1(CL) Working Scientifically</b> I can use and understand 'why' questions. I can start a conversation with an adult or a friend and continue it for many turns. I can use talk to organise myself and play. I can engage in story times. I can learn new vocabulary. I can ask questions to find out more and to check I understand what has been said to me.</p> <p><b>Autumn 2</b> I know that some animals hibernate in winter.</p> <p><b>Autumn 2 (CL) Working Scientifically</b> I can talk about stories to build understanding. I can listen to and talk about non-fiction books. I can say my views. I can connect one idea or action to another using a range of connectives. I can make observations of change.</p> <p><b>Spring 2</b> I know some differences between living and non-living things. I know that animals breathe, grow and feed.</p> <p><b>Spring 2(CL) Working Scientifically</b> I can describe events in some detail. I can use talk to help work out problems and organise thinking and activities. I can use talk to explain how things work and why they might happen. To know and use new vocabulary in discussions and play.</p>	<p><b>Autumn 1</b> I know how I have changed since I was a baby. I can order my life on a timeline.</p> <p><b>Working Scientifically - Autumn 1(CL)</b> I can use and understand 'why' questions. I can start a conversation with an adult or a friend and continue it for many turns. I can use talk to organise myself and play. I can engage in story times. I can learn new vocabulary. I can ask questions to find out more and to check I understand what has been said to me.</p> <p><b>Spring 1 (PSHE)</b> I know what makes a healthy lunch. I know how to brush my teeth properly.</p> <p><b>Spring 1 (CL) Working Scientifically</b> I can talk about my ideas and thoughts in well-formed sentences. I can connect one idea or action to another using a range of connectives. I can listen to and talk about non-fiction to develop new knowledge and vocabulary I can learn rhymes, poems and songs. I can describe events in some detail. I can use new vocabulary taught in projects, in discussions and play.</p> <p><b>Summer 1</b> know how to care for caterpillars as they change into butterflies. I know the lifecycle of a butterfly.</p> <p><b>Summer 1 (CL) Working Scientifically</b> I can make observations of seasonal change.</p>			<p><b>Autumn 2</b> I know some materials. I know what happens when chocolate is heated. I know which materials can change shape</p> <p><b>Autumn 2 (CL) Working Scientifically</b> I can talk about stories to build understanding. I can listen to and talk about non-fiction books. I can use new vocabulary. I can say my views. I can connect one idea or action to another using a range of connectives. I can make observations of change.</p>	<p><b>Autumn 2</b> I know what nature is I know the 4 seasons. I know what happens in the 4 seasons.</p> <p><b>Autumn 2 (CL) Working Scientifically</b> I can talk about stories to build understanding. I can listen to and talk about non-fiction books. I can use new vocabulary. I can say my views. I can connect one idea or action to another using a range of connectives. I can make observations of change.</p> <p><b>Spring 1</b> I know the order of the 4 seasons. I know how weather changes in each season I can recognise signs of winter I know how rainbows are made.</p> <p><b>Spring 1 (CL) Working Scientifically</b> I can talk about my ideas and thoughts in well-formed sentences. I can connect one idea or action to another using a range of connectives. I can listen to and talk about non-fiction to develop new knowledge and vocabulary To learn rhymes, poems and songs. I can describe events in some detail. I can use new vocabulary taught in projects, in discussions and play.</p> <p><b>Spring 2</b> I know how litter affects our local environment. I know how I can make a difference to litter in our local environment.</p> <p><b>Spring 2 (CL) Working Scientifically</b> I can describe events in some detail.</p>	<p><b>Spring 1</b> I know the planets in the solar system. I know that the sun is a star. I know what astronauts wear, eat and do in space. I know the earth tilts.</p> <p><b>Spring 1 (CL) Working Scientifically</b> I can talk about my ideas and thoughts in well-formed sentences. I can connect one idea or action to another using a range of connectives. I can listen to and talk about non-fiction to develop new knowledge and vocabulary To learn rhymes, poems and songs. I can describe events in some detail. I can use new vocabulary taught in projects, in discussions and play.</p>

<p>I can engage in fiction and non-fiction books and talk about what they have read and what has been read to them.</p> <p><b>Summer 1</b>  I know that plants have roots, stems, and leaves.  I know the jobs of some parts of the plant.  I know that seeds need air, water and light to grow.  I know that food grows from the earth.  I know how food is grown on an allotment.  I know what fruit grows in our local orchard.</p> <p><b>Summer 1 (CL)Working Scientifically</b>  I can make observations of seasonal change.  I can describe events in some detail and talk about what I observe in the natural world  I can use talk to help work out problems and organise thinking and activities.  I can explain how things work and why they might happen regarding the environment.  I can make comments about what I have heard and ask questions to clarify their understanding. (ELG)  I can have conversations  I can participate in small group, class and one-to-one discussions, offering my own ideas, using recently introduced vocabulary.</p>	<p>I can work in a small group, class and one-to-one discussions, offering my own ideas, using recently introduced vocabulary.  I can engage in fiction and non-fiction books and talk about what they have read and what has been read to them.</p>	<p>I can describe events in some detail and talk about what I observe in the natural world  I can use talk to help work out problems and organise thinking and activities.  I can explain how things work and why they might happen regarding the environment.  I can make comments about what I have heard and ask questions to clarify their understanding. (ELG)  I can have conversations  I can participate in small group, class and one-to-one discussions, offering my own ideas, using recently introduced vocabulary.</p>			<p>I can use talk to help work out problems and organise thinking and activities.  I can use talk to explain how things work and why they might happen.  To know and use new vocabulary taught in project in discussions and play.  I can work in a small group, class and one-to-one discussions, offering my own ideas, using recently introduced vocabulary.  I can engage in fiction and non-fiction books and talk about what they have read and what has been read to them.</p>	
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**Knowledge, skills and understanding are further developed through both inside and outside continuous provision in the indoor and outdoor classrooms.** These include:

**Indoor:** Construction, Mathematics, Reading, Malleable and Craft, Role Play, Writing

**Outdoor:** Mud Kitchen, Bike Track, Construction, Music and Stage, Role Play, Sand, Storytelling, Water

	Plants	Living Things and Their Habitats	Animals including Humans	Energy	Materials & Changes	Environment	Earth and Space
Y1	<p><b>Summer 1</b> I know the parts of a plant or tree: root, stem, leaf and flower. I know the name of local trees: alder, oak, sycamore, beech, birch, rowan, holly. I know that some trees are deciduous: alder, oak, sycamore, beech, birch, rowan, and some are evergreen: holly and pine. I know the names of flowering plants: begonia, crocus, forsythia, marigold, snap dragon. I know the names of wildflowers: oxeye daisy, corn marigold, cornflower, forget-me-not, knapweed. I know that seeds need moist conditions to help them to germinate. I know that seeds germinate and grow into seedlings and then plants.</p> <p><b>Working Scientifically</b> I can label my drawing and photograph with the plant parts: root, stem, flower, leaf. I can sort leaves into groups: leaves which have lobes and leaves which do not; leaves which are green and leaves which have two colours; leaves which are prickly and leaves that are not prickly. I can draw pictures to explain that a deciduous tree loses its leaves in winter, but an evergreen tree keeps its leaves all year round. I can use a table to record information about wildflowers and flowering plants. I can make a prediction to say what I think will happen to the cress seeds I have planted. I can record how the seedlings have changed in height over the half term.</p>	<p><b>Spring 1</b> I know the names of animals including fish, amphibians, reptiles, birds and mammals. I know animals that are carnivores, herbivores and omnivores. I know the teeth of carnivores, herbivores and omnivores. I know the features of fish, amphibians, reptiles, birds and mammals. I know how animals are different or the same (fish, amphibians, reptiles, birds and mammals, including pets) I know how to classify an animal.</p> <p><b>Working Scientifically</b> I can ask questions about animals. I can use the features of animals to compare. I can record using a labelled drawing or by annotating a photograph.</p>	<p><b>Autumn 2</b> I can name the parts of the human body. I can say which part of the body is associated with each sense. I can explain what the senses do. I can ask questions about the senses.</p> <p><b>Working Scientifically</b> I can record my results in a table. I can explain what I have found out. I can make a simple prediction.</p>		<p><b>Autumn 1</b> I know a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I know the properties of everyday materials. I can group materials. I know how to test an object for a property. I know how to record an experiment.</p> <p><b>Working Scientifically</b> I can observe features of my local environment. I can record my findings. I can give a reason why. I can carry out a simple test and record a prediction. I know how to measure the temperature. I can explain how the temperature has changed.</p> <p><b>Summer 2</b> I know why different materials have been used to make different objects. I know the difference between humanly constructed and manmade. I know what properties materials have and how they are constructed. I know the meaning of transparent and opaque and know why it is useful that some materials are transparent. I know what elastic is and can explain what happens as elastic is stretched. I know how to describe the season we are currently in and I can say how I know. I know how to explain the change in temperature from last half term until now. I know how to measure the temperature and can explain how it has changed.</p> <p><b>Working Scientifically</b> I make a detailed prediction. I design and conduct a fair experiment. I can observe features of my local environment and name what I have seen. I can record my findings in a table. I can explore the world around me and use everyday experiences to talk about observations and help answer questions. I know how to test an object.</p>	<p><b>Spring 2</b> I know that there is plastic in lots of products that we use every day. I know that plastic bags can be harmful to the environment. I know that discarded plastic can end up in rivers, seas and oceans. I know that plastic can be harmful to marine life. I know that plastic takes hundreds of years to degrade. I know that plastic products can be reused and that this will help the environment. I know that plastic products can be upcycled and that this will help the environment.</p> <p><b>Working Scientifically</b> I can sort my plastic object into those that could be reused and those which could not. I can sort plastic bags into lists of features given to me by my teacher. I can use simple books, pictures, and web pages to find out how plastic can harm marine life. I can record my ideas as a labelled drawing or by annotating a photograph.</p>	

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Y2	<p><b>Autumn 1</b> I can identify different seeds. I know that flowering plants reproduce by making seeds. I know that seeds need water to germinate. I know that plants need water, light, nutrients and air to survive. I know that some flowering plants grow from bulbs. I can describe size, shape, colour and whether a plant looks healthy or not.</p> <p><b>Working Scientifically</b> I can record observations in drawings, photos and tables. I can observe changes over time. I can make simple measurements (length). I can draw a simple graph to show data. I can suggest ideas to investigate a given question. I can summarise results – say what I have found out from my investigation.</p>	<p><b>Summer 2</b> I know that some things are living, some are dead and some things have never been alive. I know that plants can move without something acting pushing against them to make them move. I know animals and plants which the habitats: coast, woodland, desert, ocean, pond. I know that a habitat requires everything that an organism requires to survive. I know how living things are adapted to live in: coast, woodland, desert, ocean, pond. I know which animals are carnivores and which are herbivores and whether they are predator or prey.</p> <p><b>Working Scientifically</b> I can record if something is alive, dead or has never been alive, in a table. I can observe how the position of the plant changes over a period of time. I can sort animals into their correct habitat. I can record my observations and findings as: labelled drawings with annotations, photographs and simple prepared tables. I can classify and group animals to say which are predators and which are prey, which eat plants and which eat meat.</p>	<p><b>Spring 1</b> I know that animals, including humans, have offspring which grow into adults. I know the lifecycle of a chicken. I know the life cycle of a butterfly. I know the lifecycle of a frog. I know that humans develop from babies into adults.</p> <p><b>Working Scientifically</b> I know how to record my observations and findings as photographs; I can sequence and annotate them. I know how to record my observations and findings as tables, block graphs and pictograms. I know how to record in words and pictures what I have found out.</p> <p><b>Summer 1</b> I know that cardiovascular exercise increases my heart rate and my breathing rate. I know that regular exercise can improve my mental health, help me to concentrate and help me sleep. I know that resistance exercise can change the shape of muscles. I know that exercise raises my heart rate which keeps my heart healthy. I know that a balanced diet needs to include the right amounts of protein, carbohydrate, fibre, and fat. I know that germs can be spread by sneezes and what I need to do to prevent this happening. I know describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p><b>Working Scientifically</b> I can label a picture of a human body to show the effects of exercise. I can record my results in a table and use the results to make a picture graph I can draw my meal onto an Eatwell plate to show what protein, carbohydrate, fibre and fat was in the meal. I can sort food and drink into groups that are healthy and not healthy. I can measure the distance in cm and m to make sure that my investigation is accurate. I can label a human outline to show that humans require exercise, a balanced diet and good hygiene to maintain health.</p>		<p><b>Autumn 2</b> I can identify everyday materials: wood, metal, plastic, glass, brick, rock, paper, cardboard. I can use scientific vocabulary to describe the properties of materials. I can use a table to write my results. I can explain how suitable materials are for particular uses. I can say which materials can change their shape by squashing, bending, twisting and stretching.</p> <p><b>Working Scientifically</b> I can use scientific vocabulary to describe the properties of a material. I can ask questions such as 'what will happen if...' I can talk about how I would find an answer to a question. I am beginning to make suggestions on how to carry out a simple test. I can say what data I might collect.</p>	<p><b>Spring 2</b> I know that plastics are man made I know that plastics don't degrade I know that plastic harms wildlife I know that using lots of plastic has a negative effect on the planet I know about plastic alternatives I know how I can reduce, reuse and recycle.</p> <p><b>Working Scientifically</b> I can sort and group materials to show which contain plastic and which do not. I can record my iPad research in words and pictures. I can record my findings in a table or graph.</p>	

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Y3	<p><b>Autumn 1</b> I know that roots absorb water and nutrients to feed a plant. I know that leaves control the amount of water in a plant. I know that stems transport water and nutrients in a plant. I know that flowers make seeds once they have been pollinated. I know that plants require nutrients to grow healthily and that these nutrients can be found in soil. I know that plants require water, nutrients, carbon dioxide and sunlight for healthy growth.</p> <p><b>Working Scientifically</b> I can record time and length in an investigation using seconds and mm. I can draw the observations I make of a leaf. I can accurately label a photograph of a leaf. I can write an explanation that describes the function of stems and uses the word because to explain how I know this. I can group seeds to show their dispersal method: wind, animal, water, explosion. I can predict which plant food will produce the best plant growth and explain why I think this. I can explain what I discovered in my investigation and how this informs me about requirements for plant growth.</p>		<p><b>Spring 1</b> I know the names of some bones and can label them on a diagram: skull, ribcage, spine, pelvis, femur, humerus. I know that the role of a skeleton is to protect and allow movement. I know that some animals have no backbone, and these animals are called invertebrates. I know that some animals have a skeleton on the inside (endoskeleton) and some have a skeleton on the outside (exoskeleton) I know that muscles can work in pairs and that when one muscle relaxes the other contracts which results in movement. I know that insects require muscles to help them to jump. I know that I cannot make my own food and that I need to eat a balanced diet to maintain good health. I know that I need vitamins to maintain good health.</p> <p><b>Working Scientifically</b> I can record my observations using simple scientific vocabulary in labelled diagrams. I can use an iPad or secondary source to find the answer to a question. I can group animals into their skeleton type. I can collect data and record it. I can write an explanation using the word because to explain which insect jumped furthest. I can use equipment, make observations and record measurements.</p>	<p><b>Autumn 2</b> I know how things move on different surfaces. I know that some forces need contact between two objects, but magnetic forces can act at a distance. I know how magnets attract or repel each other and attract some materials and not others. I know everyday materials that are attracted to a magnet. I know some magnetic materials. I know that magnets have two poles. I know whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p><b>Working Scientifically</b> I can ask relevant questions and use different types of scientific enquiries to answer them. I can set simple practical enquiries, comparative and fair tests. I can use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. I can record findings using simple scientific language, drawings, labelled diagrams, and tables.</p> <p><b>Summer 1</b> I know that you need to light to be able to see things. I know that darkness is the absence of light. I know that light is reflected from objects and that the light travels to my eyes so that I can see them. I know that light is reflected better from shiny surfaces than dull surfaces. I know that when light is blocked by an object then a shadow is formed.</p>	<p><b>Autumn 2</b> I know that rocks are made in different ways and this changes their appearance. I know I know that I can group rocks based on their physical properties. I know that there is a reaction between vinegar and sedimentary rock. I know that sedimentary rock is porous. I know that metamorphic rock is hard. I know how fossils are formed in sedimentary rock. I know that soils are made from rocks, leaves, fungus, and water. I know that the quantity of organic matter and the type of rocks that soils are made of will affect their drainage.</p> <p><b>Working Scientifically</b> I can sort rocks into groups based on their appearance: shiny, dull, crystals, grainy etc. I can classify, group and sort rocks based on their physical properties. I can conduct a test to explore the characteristics of rocks. I can use websites and text to find out how fossils are formed. I can use websites to discover the importance of Mary Anning. I can measure the time it takes for a given volume of water to drain through different soils, in seconds. I can plan an investigation to find out which sandy soil drains best.</p>	<p><b>Summer 2</b> I know that rocks are made in different ways and this changes their appearance. I know I know that I can group rocks based on their physical properties. I know that there is a reaction between vinegar and sedimentary rock. I know that sedimentary rock is porous. I know that metamorphic rock is hard. I know how fossils are formed in sedimentary rock. I know that soils are made from rocks, leaves, fungus, and water. I know that the quantity of organic matter and the type of rocks that soils are made of will affect their drainage.</p> <p><b>Working Scientifically</b> I can sort rocks into groups based on their appearance: shiny, dull, crystals, grainy etc. I can classify, group and sort rocks based on their physical properties. I can conduct a test to explore the characteristics of rocks. I can use websites and text to find out how fossils are formed. I can use websites to discover the importance of Mary Anning. I can measure the time it takes for a given volume of water to drain through different soils, in seconds. I can plan an investigation to find out which sandy soil drains best.</p>	<p><b>Spring 2</b> I know the names of mini beasts that I would expect to find in my local area: woodlouse, stag beetle, common wasp, bumble bee, honeybee, red admiral butterfly I know the names of birds that I would expect to find in my local area: woodpigeon; magpie; black headed gull; blackbird; thrush; jay; sparrow; pied-wagtail. I know the names of mammals that I would expect to find in my local area: hedgehog; grey squirrel; hare; badger; mole. I know that diversity should be encouraged in all environments. I know that if one animal in a food chain becomes extinct then there is a negative effect on the other animals within that food chain. I know that rising sea levels have a negative impact on the planet and will result in land loss and extinction.</p> <p><b>Working Scientifically</b> I can talk about how I have grouped the animals that I found in the local area. I can use a simple key to show if the animals I found travel on air or on land; have 2 legs or 6 legs or live in rocks or on a tree. I can use an iPad or secondary source to find the names of at-risk animals. I can use simple keys to sort animals found in the Serengeti using questions that have a 'yes' or 'no' answer. I can make some accurate whole number measurements using standard measures (mm, cm). I can correctly use the equipment that I have been given to set up a test. I can describe the changes that I see happening in my investigation.</p>	<p><b>Summer 1</b> I know that you need to light to be able to see things. I know that darkness is the absence of light. I know that light is reflected from objects and that the light travels to my eyes so that I can see them. I know that light is reflected better from shiny surfaces than dull surfaces. I know that when light is blocked by an object then a shadow is formed. I know that the size of shadows made by the sun change as the position of the sun changes.</p> <p><b>Working Scientifically</b> I can record my observations using simple scientific vocabulary in labelled drawings. I can write an explanation to show what I have found out from examining my test results. I can show how light travels by drawing a diagram and annotating the direction which light travels; where it travels from and where it travels to. I can think of different ideas and suggest ideas about how to investigate which materials block most light. I can make a prediction about which objects I think will cast a shadow. I can use simple scientific words and language to describe and compare how shadows change as the position of the light source changes.</p>

				<p>I know that the size of shadows made by the sun change as the position of the sun changes.</p> <p><b>Working Scientifically</b></p> <p>I can record my observations using simple scientific vocabulary in labelled drawings.</p> <p>I can write an explanation to show what I have found out from examining my test results.</p> <p>I can show how light travels by drawing a diagram and annotating the direction which light travels; where it travels from and where it travels to.</p> <p>I can think of different ideas and suggest ideas about how to investigate which materials block most light.</p> <p>I can make a prediction about which objects I think will cast a shadow.</p> <p>I can use simple scientific words and language to describe and compare how shadows change as the position of the light source changes.</p>			
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Y4		<p><b>Summer 2</b> I can group living things in a variety of ways and I know the different classifications of animals: vertebrates, invertebrates, reptile, fish, amphibian, bird and mammal I know living things found in the local environment and create a classification key to name leaves and trees. I know the factors that impact on local environments and suggest protective measures. I know the benefits of wildlife reserves and parks and explain why areas like this are needed. I know changes that happen to the environment and on earth and the impact these have on living things. I know what is meant by extinction and I know animals that are extinct or endangered; I know factors that can cause extinction. I know what is meant by 'survival of the fittest'.</p> <p><b>Working Scientifically</b> I can use Venn diagrams and Carroll diagrams to group animals. I can identify similarities and differences. I can collect and record a range of living things from the local Environment. I can group, sort and classify living things. I can use my scientific understanding to describe problems with local environments and habitats</p>	<p><b>Summer 1</b> I know I know the main parts of the human digestive system: mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus. I know what happens at each of the main parts of the human digestive system and how this helps to digest food: mouth, oesophagus, stomach, intestine, rectum, anus. I know the four different types of teeth found in humans: pre-molar, molar, canine, incisor. I know that it is important to care for teeth by brushing them with toothpaste. I know what could happen to teeth if they are not cleaned carefully. I know which organisms are producers, predators or prey. I know which organisms are producers, which are predators and which are prey on a food chain.</p> <p><b>Working Scientifically</b> I can record the main parts of the human digestive system using clear scientific vocabulary in scientific diagrams with labels. I can explain what happens to food from the moment it is put into the mouth until it is removed from the body as waste. I can research tooth types using a text or and iPad. I can explain my results using scientific vocabulary. I can group a selection of organisms to show which</p>	<p><b>Spring 1</b> I know that sounds are made when materials vibrate. I know that the length of time a material vibrates for depends on that material's physical properties. I know that sound travels by vibrations being passed on from particle to particle. I know why solids are better at passing these vibrations from particle to particle. I know that pitch is the 'squeakiness' of a sound. I know that loudness and pitch are not the same thing. I know that volume describes the loudness of a sound. I know that louder sounds will travel further than quieter sounds. I know why sounds get fainter with distance.</p> <p><b>Working Scientifically</b> I can record data relating to sound in a table. I can describe the patterns between the length of a material and the sound it makes when it vibrates. I can collect and record data relating to how sound travels through solids, liquids and gases using tables, diagram and annotations. I can compare how sound travels through different media and explain why there are differences. I can make observations and collect data related to pitch. I can explain the relationship between pitch and frequency.</p>	<p><b>Autumn 1</b> I know how to group materials together, according to whether they are solids, liquids or gases. I know about changes in state, e.g., solid to liquid or liquid to gas. I know that some materials change state when they are heated or cooled. I know the temperature at which changes of state happen in degrees Celsius (°C). I know about evaporation in the water cycle. I know about condensation in the water cycle. I know the link between the rate of evaporation and temperature.</p> <p><b>Working Scientifically</b> I can make a prediction and give a reason for this, making links to what I already know. I can decide which observations to make. I can record my observations, data and results using scientific vocabulary and symbols - in tables and labelled diagrams. I can explain why something has happened using the correct scientific vocabulary. I can compare my results with others and suggest reasons why they might be different.</p>	<p><b>Spring 2</b> I know that exhaust fumes can damage health. I know that cars can cause damage to air quality. I know that reducing the use of fossil fuels, will reduce exhaust emissions and improve air quality. I know that carbon dioxide, humidity, dust and dirt can reduce the quality of air in the classroom. I know that to improve air quality in the classroom I can: improve ventilation, reduce humidity, and reduce pollution from carbon dioxide, dust and dirt.</p> <p><b>Working Scientifically</b> I can record my observations in bar graphs. I can record my ideas using clear scientific vocabulary and symbols in scientific diagrams. I can explain why air quality is poor in particular situations using the correct scientific vocabulary. I can use an iPad to find ways to improve air quality in school. I can write what I have found out in my own words.</p>	

	<p>and make suggestions for how to overcome them. I can explore the local environment and identify ways in which humans are having a positive impact. I can set up a fair test and explain why it is fair and collect data from an investigation. I can use books and the internet to answer questions about the environment and adaptation. I can record what I have learned about environmental changes and living things.</p>	<p>are producers, which are predator and which are prey and I can explain why I have made each selection. I can record what I have learnt in a clear key using scientific vocabulary.</p>	<p>I can use the internet to find out about the loudness of different sounds. I can record my findings in a way that I choose and set up a fair test to measure distance and sound.</p> <p><b>Autumn 2</b> I can name common appliances that run on electricity. I know whether or not a lamp will light in a simple series circuit. I know how to construct a simple series electrical circuit, identifying and naming its basic parts: cells, wires, bulbs, switches and buzzers. I know that a switch opens and closes a circuit. I know some common conductors and insulators. I know that metals are good conductors.</p> <p><b>Working Scientifically</b> I can work with a group to suggest questions that can be investigated further. I am learning to use of a range of criteria for grouping, sorting and classifying and can explain how my ideas link scientifically.</p>			
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Y5		<p><b>Summer 2</b> I know that animals can only produce offspring via sexual reproduction. I know the life cycle of an insect. I know the life cycle of a mammal. I know the life cycle of a bird. I know the life cycle of an amphibian. I know the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I know the male and female parts of a flower. I know how plants reproduce sexually. I know the difference between sexual and asexual reproduction in plants. I know the role that pollination plays in sexual reproduction in plants.</p> <p><b>Working Scientifically</b> I can research to answer the question 'What is the lifecycle of an insect?' and present my findings. I can research to answer the question 'How do mammals develop as they get older?' and present my findings. I can research to answer the question 'How do bird eggs change over time?' and present my findings. I can research to answer the question 'How do smooth newts and frogs develop over time?' and present my findings. I can observe the parts of a flower and record using a labelled diagram. I can explain how plants can reproduce without pollination occurring. Using scientific knowledge and understanding.</p>	<p><b>Summer 1</b> I know the different stages of the human life cycle: baby, toddler, child, teen, adult, geriatric. I know what gestation is and that it differs depending on the species. I know that a foetus grows and changes as it develops. I know that there are features of childhood that are the same for all children, but that there are also differences. For example: All children do not have the same size feet. I know that eyesight and muscle strength diminish as humans become old. I know the phases of human development and can describe the changes that occur.</p> <p><b>Working Scientifically</b> I can decide whether questions can be answered by testing or by research. I can record gestation periods clearly using scientific vocabulary and symbols bar charts and line graphs. I can record my data about foetal development using clear scientific vocabulary in a line graph. I can identify patterns in my data and decide how to record it in a chart. I can take accurate measurements using weighing scales and understand why I need to repeat my measurements. I can say whether my research has answered my question.</p>	<p><b>Spring 1</b> I know how gravity makes objects fall towards the Earth. I know the effects of air resistance. I know the effects of water resistance. I know the effect of friction between moving surfaces I know that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p> <p><b>Working Scientifically</b> I know when variables need to be controlled and decide when a comparative or fair test is the best way to answer my question. I know how to write accurate conclusions which match the evidence. I make suggestions of how to record my results. I know how to find relationships in the data that I have collected. I know about cause and effect. I know which secondary sources are most useful to research my ideas. I know if my research has answered my question.</p>	<p><b>Spring 1</b> I know what reversible and irreversible changes are and give examples of them. I can produce my own hardness scale and link the hardness of materials to their use. I can classify materials as transparent, translucent or opaque. I know the terms conductor and insulator and state which types of material make the best ones. I know materials that will dissolve in liquid to form a solution and know how to recover a substance from a solution. I know some of the signs that tell a chemical reaction has occurred. I can classify substances as acids, alkalis or neutral'. I can separate mixtures through filtering, sieving and evaporating.</p> <p><b>Working Scientifically</b> I know how to record data using a table to present my results. I know how to take measurements, using a range of scientific equipment. I know how to begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. I know how to make my own decisions about what equipment is most suitable. I know how to use scientific diagrams and labels to record data and support my conclusion. I know how to carry out a scientific enquiry, make accurate observations and report my findings. I know how to make my own decisions about what observations to make, how long to make them for and what measurements to make. I know how to report conclusions based upon data from investigations.</p>	<p><b>Autumn 1</b> I know what reversible and irreversible changes are and give examples of them. I can produce my own hardness scale and link the hardness of materials to their use. I can classify materials as transparent, translucent or opaque. I know the terms conductor and insulator and state which types of material make the best ones. I know materials that will dissolve in liquid to form a solution and know how to recover a substance from a solution. I know some of the signs that tell a chemical reaction has occurred. I can classify substances as acids, alkalis or neutral'. I can separate mixtures through filtering, sieving and evaporating.</p> <p><b>Working Scientifically</b> I know how to record data using a table to present my results. I know how to take measurements, using a range of scientific equipment. I know how to begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. I know how to make my own decisions about what equipment is most suitable. I know how to use scientific diagrams and labels to record data and support my conclusion. I know how to carry out a scientific enquiry, make accurate observations and report my findings. I know how to make my own decisions about what observations to make, how long to make them for and what measurements to make. I know how to report conclusions based upon data from investigations.</p>	<p><b>Spring 2</b> I know which living things can be found in my local environment. I know that auroch, lynx, elk, wolf, bison, brown bear were once visible in my local area. I know why auroch, lynx, elk, wolf, bison, brown bear became extinct in my local area. I know what could be done to reintroduce auroch, lynx, elk, wolf, bison, brown bear successfully into my local area. I know that bees are essential pollinators and that they are an essential part of food chains. I know that introducing native species to an area can improve diversity and impact positively on ecosystems.</p> <p><b>Working Scientifically</b> I can use develop a key to identify, classify and describe animals that live in my local environment. I can identify patterns that might be found in my local environment. I can explain which secondary sources are most useful to research why some animals that used to live in my local area are now extinct. I can say whether my research has answered my question to explain why animals are no longer present in my local area. I can independently plan an investigation to see which habitat bees prefer and explain my planning decisions. I can make a prediction and begin to think about what will take place. when I put an intervention in place to improve the outcomes for native species.</p>	<p><b>Autumn 2</b> I know the movement of the Earth, and other planets, relative to the Sun in the solar system. I know the movement of the Moon relative to the Earth. I know the Sun, Earth and Moon have approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night. I can explain the apparent movement of the sun across the sky.</p> <p><b>Working Scientifically</b> I can raise questions and suggest how to find the answer. I can decide which will support me in my work best. I am beginning to make suggestions about how to record my ideas. I can make my own decisions about what observations to make, how long to make them for and what measurements to make. I can recognise which secondary sources are most useful to research my ideas. I can say whether my research has answered my question.</p>

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	<p><b>Autumn 1</b> I can classify plants, animals and micro-organisms into broad groups according to observable characteristics. I can give reasons for classifying plants and animals based on observable characteristics. I can identify observable characteristics in living things. I can classify vertebrates and invertebrates into subcategories.</p> <p><b>Working Scientifically</b> I can ask a testable question which includes the change and measure variables. I can describe how the evidence I have collected supports or refutes my idea. I can make a prediction and explain my reasons using scientific knowledge. I can use more than one piece of evidence when forming a conclusion. I can describe how to improve planning to produce better results. I can suggest reasons for anomalies. I can select and plan the most appropriate type of scientific enquiry to use to answer scientific questions.</p>	<p><b>Spring 1</b> I know the main parts of the human circulatory system: heart, ventricle, atrium, artery, vein. I know how the heart functions and can explain how blood moves through the heart. I know the role of the circulatory system: the heart, blood vessels and blood. I know how diet, exercise, drugs, and lifestyle impact on the way the human body functions. I know the ways in which nutrients and water are transported within animals, including humans.</p> <p><b>Working Scientifically</b> I know how to raise a scientific question that can be tested. I know how to decide on the most appropriate format to present my data and my results. I know how to explain how the evidence I have collected supports or refutes my idea. I know how to make a prediction and explain my reasons using scientific knowledge. I know how to use more than one piece of evidence when forming a conclusion.</p> <p><b>Summer 2</b> I know why animals adapt to their environment. I know how polar bears have adapted to suit their environment and apply this knowledge to give further examples of adaptation. I know how the peppered moth adapted due to</p>	<p><b>Autumn 2</b> I know how changing the voltage of cells in a circuit affects the brightness of a lamp. I know how changing the voltage of cells in a circuit affects the loudness of a buzzer. I know how parts of a circuit function. I can draw a diagram of a circuit and use symbols to represent cells, wires, lamps/bulbs, buzzers, switches and motors.</p> <p><b>Working Scientifically</b> I can ask a testable question which includes the change and measure variables. I can describe how the evidence I have collected supports or refutes my idea. I can make a prediction and explain my reasons using scientific knowledge. I can use more than one piece of evidence when forming a conclusion. I can describe how to improve planning to produce better results. I can suggest reasons for anomalies. I can select and plan the most appropriate type of scientific enquiry to use to answer scientific questions.</p> <p>Summer 1 I know how to classify luminous and non-luminous objects. I know that we see objects because light travels in straight lines from light sources to our eyes or from light sources to objects and then to our eyes. I know why shadows have the same shape as the objects that cast them.</p>	<p><b>Summer 1</b> I know how to classify luminous and non-luminous objects. I know that we see objects because light travels in straight lines from light sources to our eyes or from light sources to objects and then to our eyes. I know why shadows have the same shape as the objects that cast them. I know that concave lenses diverge the light that hits them and convex converge.</p> <p><b>Working Scientifically</b> I can raise a scientific question that can be tested. I can plan and conduct different types of scientific enquiries to answer questions. I can decide on the most appropriate format to present my data and my results. I can explain how the evidence I have collected supports or refutes my idea. I can make a prediction and explain my reasons using scientific knowledge. I can use more than one piece of evidence when I form a conclusion.</p>	<p><b>Spring 2</b> I know how the volume of rainfall has changed in the Northwest of England since the 1800s. I know how the temperature has changed in the Northwest of England. I know what a fossil fuel is. I know how fossil fuels create greenhouse gases which contribute towards climate change. I know the names of extreme weather: floods, tsunami, hurricane, tornado, tropical cyclone, mudslide. I know where extreme weather occurs. I know the impact that extreme weather can have on human life. I know that a carbon footprint is the term used to describe the amount of energy used. I know the negative impact that high carbon footprints can have on human life and the planet.</p> <p><b>Working Scientifically</b> I can identify the range and intervals that I need to use for a set of measurements. I can use the results from my investigation and the knowledge I have acquired during my research to form a conclusion. I can evaluate my research. I can separate fact from fiction or opinion. I can decide on the best way to present what I have found out.</p>	
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		<p>pollution during the industrial revolution.</p> <p>I know that characteristics are passed from one generation to the next.</p> <p>I know that species produce offspring that are the same as the parents but are different in some ways.</p> <p>I know that fossils records provide evidence of evolutionary change in humans and can describe some of these changes.</p> <p>I know that Charles Darwin was a pioneer in the discovery of evolution through his work with mockingbirds.</p> <p><b>Working Scientifically</b></p> <p>I can use scientific words and clear sentences to explain adaptations of animals.</p> <p>I can decide which is the best format to present my results and explain my choices.</p> <p>I can make a prediction to say which characteristics will be passed on to offspring and explain my reasons using scientific knowledge.</p> <p>I can use an iPad for research and evaluate fact from fiction.</p> <p>I can use more than one piece of evidence to write a conclusion and explain what I understand about evolution.</p>	<p>I know that concave lenses diverge the light that hits them and convex converge.</p> <p><b>Working Scientifically</b></p> <p>I can raise a scientific question that can be tested.</p> <p>I can decide on the most appropriate format to present my data and my results.</p> <p>I can explain how the evidence I have collected supports or refutes my idea.</p> <p>I can make a prediction and explain my reasons using scientific knowledge.</p> <p>I can use more than one piece of evidence when I form a conclusion.</p>			
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