

Animals Including humans					
Lesson Sequence					
Explore how animals have offspring that turn into adults.	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).	Understand that humans are animals and that we too have offspring that turn into adults. Explore how babies change to toddlers, to teenagers, adults, then elderly.	Understand that we need to eat the right amount of different types of food.	Investigate the importance of human exercise.	Investigate the importance of good hygiene to keep the body healthy.
Substantive Knowledge					
All living things reproduce and have offspring. Some animals give birth to live young, and they look like them when they are born e.g. cats, dog, and humans. - Some animals have offspring that doesn't look like them e.g. fish, frogs. - Some animals lay eggs which hatch into live young e.g. birds, snakes.	To survive, animals (including humans) need water, food, shelter, warmth and oxygen.	Offspring must receive the basic needs of an animal to grow into an adult. When they are fully grown, they can also reproduce. - Egg > chick > chicken - Spawn > tadpole > frog - Eggs > larva > pupa > ladybird Baby > toddler > child > teenager > adult	To grow into a healthy adult, we must eat the right types of food. A healthy diet includes the right balance of fruit and vegetables, carbohydrates, dairy, proteins and fats Conclude that if you only eat sugary foods your teeth would fall out and you would become overweight. Conclude that if you only eat fruit and vegetables your bones won't be strong, you won't get protein or healthy fats. Conclude that: An apple- fruit. A carrot- vegetables Pasta- carbohydrate Cheese- dairy Fish-protein Chocolate-	To grow into a healthy adult we must do regular exercise. Children should be active for 60 minutes every day.	To stop illness and infections, we need to maintain good hygiene and keep ourselves clean. Bad bacteria spreads through poor hygiene and contact. If you do not wash your hands, you will spread germs to others. Good hygiene means washing your hands, body and teeth. It also means if you are poorly, you take extra care with your hygiene to stop germs spreading. Bad bacteria makes us poorly, but good bacteria keep our immune systems healthy.

			fats. A healthy diet includes a balance of all the food groups. Conclude that too much of one food groups can make people sick. Healthy means you are in a good physical and mental condition. Unhealthy means you are in a poor physical or mental condition		
Disciplinary Knowledge					
Identifying and classifying Classifying is when you sort items into groups based on similarities and differences. To help classify objects, it is good to observe them. Observing means to look closely. Identify that humans, dogs and cats' offspring look like their parents. Frog offspring doesn't look like its parent. Research using secondary sources Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Secondary sources of information can be used to research what animals need to survive and what will happen if any of these are missing. Secondary sources of information can be used to identify the basic needs of an animal A pictogram is a chart that has images that represent the value of data. Know how to read the data on a pictogram to answer questions.	Research using secondary sources Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Children use secondary sources and information to research what animals needs to survive and what will happen if any of these are missing. You can use secondary sources of information to research the life cycles of chickens, frogs, ladybirds and humans. A conclusion is when you answer a question using what you have found out from scientific enquiry.	Research using secondary sources Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Secondary sources of information can be used to investigate how much of each food group you should eat to stay healthy. Secondary sources of information can be used to investigate the impact of sugar on teeth and the human body. Identify and classify Classifying is when you sort items into groups based on similarities and differences. You can classify different foods as fruit, vegetable,	Research using secondary sources Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Secondary sources of information can be used to investigate how much of each food group you should eat to stay healthy. Secondary sources of information can be used to investigate the impact of sugar on teeth and the human body. Identify and classify Classifying is when you sort items into groups based on similarities and differences. You can classify different foods as fruit, vegetable,	Observation over time. Observing over time is when you watch or measure something over a period of time to see how it changes. You can observe your heart rate over time to see how it changes when completing different exercises. We use stopwatches to measure time. A second is a measure of time. There are 60 seconds in a minute and 60 minutes in an hour. Results from an observation over time can be recorded in a table.	Pattern seeking Pattern seeking is when you carry out simple tests or observe closely to look for patterns in results. You can use the results from pattern seeking enquiries to suggest answers to questions. You can make predictions about what patterns you might find before carrying out a pattern seeking enquiry. A prediction is when you use your existing knowledge to say what might happen. Ask questions about the importance of keeping clean and hygienic and what that looks like. You can use the results from pattern seeking enquiries to

You can use secondary sources of information to investigate which animals lay eggs and which give birth to live young			carbohydrate, dairy, protein or fat. Research using secondary resources Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Secondary sources can be used to research what it means to be healthy/unhealthy. Know that from using secondary sources, a conclusion is when you answer a question using what you have found out from scientific enquiry.	A table is a clear way to present information.	suggest answers to questions. Conclude that when we exercise, our heart rate increases, we breathe deeply and our faces go red.
--	--	--	--	---	---

Materials					
Lesson Sequence					
Investigate how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Children are given a set of materials and predict if they will float or sink and explain why. Children test out the objects to see if they float or sink.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - focus on absorbency.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - waterproof	Find out about people who have developed new materials. E.g. John Dunlop, John McAdam, Charles Macintosh.	Investigate common items looking at the materials they are made from and why they are suitable for the purpose
Substantive Knowledge					
Shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Squashing: pushing an object together in your hands Bending: holding both ends of the object and bring it towards yourself. Twisting: holding an object and turn the object in opposite directions Stretching: Slowly pulling the object in opposite direction	Properties of everyday materials · Wood - strong, sturdy, floats, opaque · Plastic – transparent, common material · Glass – transparent, strong · Metal – strong, opaque, will sink · Brick – heavy, opaque Rock – heavy, will sink · Paper –light weight, opaque · Cardboard – light weight, opaque · Polystyrene- light weight, opaque	An absorbent material allows water to enter or pass through it. · Cotton wool – absorbs water · Sponge – absorbs water · Fabric – absorbs water · Paper – absorbs water · Wood – absorbs water · Plastic – does not absorb water · Glass – does not absorb water · Polystyrene – does not absorb water	A waterproof material is designed to prevent water from entering or passing through. · Wood – not waterproof · Plastic – waterproof · Glass – waterproof · Metal – waterproof Brick –waterproof Rock – waterproof · Paper – not waterproof · Cardboard – not waterproof · Polystyrene- waterproof	Charles Macintosh · Born in 1766 in Scotland · Got rubber from trees · He was 20 years old when he started a factory · His dad was a merchant He put two pieces of cloth together and found that water did not sink through · He made the first waterproof fabric · He wanted to be a scientist · He made coats and waterproof clothes	A suitable material is a material with the appropriate properties for the purpose it is being used for. · Life jackets are made out of plastic because they need to be waterproof, light, and expandable and be able to float. Cash boxes are made out of metal because they are strong, waterproof and the metal is easy to shape when made. Some different materials are used for the same thing- spoons can be made from plastic, wood, metal, but not normally from glass

Disciplinary Knowledge					
Pattern seeking Pattern seeking is when you carry out simple tests or observe closely to look for patterns in results. A pattern seeking enquiry can be carried out to investigate how to change different materials. When you collect data, it needs to be presented clearly and easy to understand. A table is a simple way to present data Identify/classify Classifying is when you sort items into groups based on similarities and differences. To help classify objects, it is good to observe them. Observing means to look closely. Materials can be classified into materials that will squash/bend/twist/stretch	Identify/classify Classifying is when you sort items into groups based on similarities and differences. To help classify objects, it is good to observe them closely. Objects can be classified by the materials they are made from Know that you can answer questions using knowledge from what you have observed. Conclude that we choose the material that objects are made from based on the material's properties.	Pattern seeking Pattern seeking is when you carry out simple tests or observe closely to look for patterns in results. You can ask questions to help you look for patterns. You can use the results from pattern seeking enquiries to suggest answers to questions. You can make predictions about what patterns you might find before carrying out a pattern seeking enquiry. A prediction is when you use your existing knowledge to say what might happen. A pattern seeking enquiry can be carried out to observe whether a floatable device can hold a weight over a period of time. Know that using the same weight on each boat will make it easier to see patterns.	Pattern Seeking Pattern seeking is when you carry out simple tests or observe closely to look for patterns in results. You can ask questions to help you look for patterns. Know that a conclusion is when you answer a question using what you have found out in your scientific enquiry. Conclude that plastic, glass, metal, rock and polystyrene are waterproof. You can use the results from pattern seeking enquiries to suggest answers to questions. You can make predictions about what patterns you might find before carrying out a pattern seeking enquiry A prediction is when you use your existing knowledge to say what might happen. A pattern seeking enquiry can be carried out to observe whether a box made from different materials can keep an object dry when in water.		Pattern seeking Pattern seeking is when you carry out simple tests or observe closely to look for patterns in results. A pattern seeking enquiry can be carried out to look at which materials have been chosen to make certain objects. Know that a conclusion is when you answer a question using what you have found out in your scientific enquiry. Conclude that materials have been chosen to make different objects based on their properties.

Year 2
Spring

Living things and their Habitats					
Lesson Sequence					
Explore the differences between things that are living and things that are dead.	Study local area and identifying and naming the plants and animals and the habitat they live in.	Look at microhabitats and identify and name the plants and animals that live in them	Explore larger habitats from around the world looking at the plants and animals that live in them.	Describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other by considering the adaptations of animals, and how living things in a habitat depend on each other.	Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
Substantive Knowledge					
Animals and plants are living things. Dead things are animals and plants that have died. Parts of living things that are no longer attached, such as empty shells or fallen leaves are also dead. Objects made from rock, metal or plastic have never lived. Things that are alive move, respire, excrete, reproduce, grow, are sensitive and need nutrition.	A habitat is somewhere that animals and plants live. Animals can find food, water and shelter in a habitat. Plants can grow in a habitat. Plants grow in areas that provide them with food, water and sunlight.	A microhabitat is a very small habitat where mini beasts live. E.g. under a stone, under fallen leaves.	Desert habitat: dry with very little water - acacia tree, camel, gecko, scorpion Ocean habitat – fish, seaweed (algae), plankton, whale Coastal habitat: wet and windy - limpets, star fish, crab, Polar: cold, windy, snowy/ice, not many plants – polar bear, arctic fox, snowy owl, lichens, seal, penguin	Animals and plants depend on each other to survive. For example: - Worms depend on plants because they feed on dead leaves, but plants depend on worms who make the soil healthy by digging holes and allowing air in. - Birds also need worms because they eat them. - Worms are a source of food for birds If there were no worms, there would be less birds as there would be more competition	Food chains show where plants and animals get their food from. All living things have their part to play in food chains. Without them, other plants and animals may not be able to survive. Sun > grass > rabbit > fox Sun > leaves > worm > bird Energy is fuel for living things so they can move, respire, excrete, reproduce, grow, are sensitive and need gain nutrition.

				for food. The soil would not be as healthy without worms	
Disciplinary Knowledge					
Identify and classify Classifying is when you sort items into groups based on similarities and differences. To help classify objects, it is good to observe them. Observing means to look closely. Know that you can classify things into those that are living, things that are dead and things that have never lived. When you collect data, it needs to be presented clearly and easy to understand. A table is a simple way to present data from a classification enquiry. Know that you can answer questions using knowledge from what you	Research using secondary sources Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Secondary sources can be used to find out what a habitat is and what animals get from a habitat. Know that you can use information gathered from secondary sources to answer questions.	Identifying Identifying means that you find out what something is. You can observe a habitat to identify the different creatures that can be found in different habitats in the school grounds. Observing means to look closely. You can use a magnifying glass to observe closely and look at things that are small.	<u>Classifying</u> Classifying is when you sort items into groups based on similarities and differences. To help classify objects, it is good to observe them closely. Observing means to look closely. <u>Research using secondary sources</u> Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions.	<u>Pattern seeking</u> Pattern seeking is when you carry out simple tests or observe closely to look for patterns in results. You can make predictions about what patterns you might find before carrying out a pattern seeking enquiry A prediction is when you use your existing knowledge to say what might happen. You can pattern seek to investigate how animals and plants rely on each other <u>Research using secondary sources</u>	<u>Observation over time</u> Observing over time is when you watch or measure something over a period of time to see how it changes. You can observe over time how energy travels through a food chain and how this is needed for animals and plants to survive. You can use a magnifying glass to observe closely. You can use time-lapse on an iPad to observe changes over time. When you collect data, it needs to be presented in a

have observed. Conclude that objects made from rock, metal or plastic have never lived.			Secondary sources can be used to find out about the animals, plants and their habitats Research from secondary sources can help with class Know that you can ask questions to help you look for patterns. E.g. <i>‘Do animals only physically adapt to their habitat?’</i> <i>‘What familiar characteristics can you find in these animals?’</i> <i>‘What adaptation would a polar bear need to make to live in the desert?’</i> <i>‘How has a polar bear adapted to climate change?’</i>	Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Information collected from secondary sources can be used to answer questions and prove/disprove predictions	way that is clear and easy to understand. A table is a simple way to present data. Know that you can answer questions using knowledge from what you have observed. Know that a conclusion is when you answer a question using what you have found out in your scientific enquiry.
--	--	--	---	---	---

Plants					
Lesson Sequence					
Set up investigation to observe how seeds and bulbs grow into mature plants.	Observe and describe how seeds and bulbs grow into mature plants.	Set up investigation to find out that plants need water in order to grow	Observe/describe how plants need water in order to grow. Set up investigation to show that plants need light in order to grow and stay healthy	Investigate the impact of temperature on plants growth and health.	Describe and explain what plants need in order to grow and stay healthy.
Substantive Knowledge					
<u>Growth from seeds to mature plants</u> Every seed has the beginnings of a new plant inside it, along with a store of food to help it grow. When the conditions are right, the seed soaks up water and swells, and the new plant bursts out of its shell. This is called germination. <u>Life cycle of a plant</u> Like all living things, plants have a life cycle. They live, reproduce and then die. Germination – if the conditions are right, a seed begins to grow. It puts out roots and shoots to turn into a young plant. Growth – the young plant produces leaves in order to get energy from the sun.		<u>What plants need to grow</u> Water – they get water from the soil through their roots. They also catch water on their leaves. Nutrients – Plants take nutrients from the soil. Sunlight – plants do not eat food, instead they use sunlight to make their own food. If plants get too little light, they will be weak.		Temperature – plants need the right temperature to grow properly. If it is too hot, they may burn/wilt. If it is too cold, they may freeze and die. Space – plants need room for their roots and stem to grow. Without space, they may not grow large enough.	
				To grow plants need: Water, nutrients, light, space, and the right temperature.	

Flowering – the plant creates flowers to help it reproduce. The flower needs pollen from another flower to do this.			
Disciplinary Knowledge			
<u>Research using secondary sources.</u> Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. We can measure temperature using a thermometer. Degrees Celsius is the measure we use for temperature. To take the temperature using a thermometer, you need to hold the top and place the opposite end where you want to measure. You need to read the scale to see what the temperature is Analyse data collected from rainforest rainfall and how this impacted plant growth. Analyse results to discuss how the investigation shows changing in variables in plant growth. Know that a conclusion is when you answer a question using what you have found out in your scientific enquiry. Conclude that: - Plants change and grow over time. - Plants need water, sunlight and nutrients to grow. - Plants who do not have one of these elements, will differ from the plants that have all 3. Plants live, reproduce and die.	<u>Fair test</u> A fair test is when one variable is changed and the other remain constant. A variable is a factor that can change. <u>Research using secondary sources.</u> Research is an investigation or study to find out facts in order to reach a conclusion. Secondary sources of information can be used to research the variables that plants need to grow, and how the growth of a plant is affected if removed. You can carry out research to answer simple questions. We can measure the amount of liquid in millilitres. We can measure millilitres using a pipette. We can use a ruler/tape measure to measure height. Centimetres and millimetres are units of measure we use for length. 1cm = 10mm. Monitoring a fair test, supervising the fair test. Monitoring change, measuring the plant in mm/cm. Recording the findings. Plants change and grow over time.	<u>Research using secondary sources</u> Research is an investigation or study to find out facts in order to reach a conclusion. You can carry out research to answer simple questions. Find out the variables that plants need to grow, and how the growth of a plant is affected if removed. <u>Fair test</u> A fair test is when one variable is changed and the other remain constant. A variable is a factor that can change. We can measure the amount of liquid in millilitres.	<u>Fair test</u> A fair test is when one variable is changed and the other remain constant. A variable is a factor that can change When you collect data it needs to be presented in a way that is clear and easy to understand. A table is a simple way to present data. Know that you can answer questions using knowledge from what you have observed.

We can use a ruler/tape measure to measure height. Centimetres and millimetres are units of measure we use for length. 1cm = 10mm.	Plants need water, sunlight and nutrients to grow. Plants who do not have one of these elements, will differ from the plants that have all 3.	We can measure millilitres using a pipette. We can use a ruler/tape measure to measure height. Centimetres and millimetres are units of measure we use for length. 1cm = 10mm. We can measure temperature using a thermometer. Degrees Celsius is the measure we use for temperature. To take the temperature using a thermometer, you need to hold the top and place the opposite end where you want to measure. You need to read the scale to see what the temperature is Monitoring a fair test, supervising the fair test. Monitoring change, measuring the plant in mm/cm. Recording the findings	
---	---	---	--

		Plants change and grow over time. Plants need water, sunlight and nutrients to grow. Plants who do not have one of these elements, will differ from the plants that have all 3.	
--	--	--	--