Lower Key Stage 2
Science
Autumn term
Animals Including Humans

Previous Learning
Year 3
In KS1, children learn in their Living Things and their Habitats unit that animals have different body parts, animals live in habitats and that all living things need different food sources. In their Animals Including Humans unit, children learn that animals can be classified into different classes (eg mammals, reptiles) and that food chains have a producer and consumer.
Children have learnt to work as a scientist by working scientifically:
Asking simple questions, observing closely, identifying and classifying, performing simple tests and working with simple data.

Year 4
In Year 3, children learn about grouping and classifying animals and how environments can change and pose potential danger in their Living things and their habitats unit.
Children built on their knowledge of working scientifically:
Sorting and classifying, identifying similarities and differences, making predictions, setting up simple fair and comparative tests, taking accurate measurements and using results to draw simple conclusions.

Sticky Knowledge

- Animals and humans need to eat the right types and amounts of nutrition to stay healthy. You need a balanced diet of all 5 food groups.
- Humans and other vertebrates have a skeleton for support and protection
- Humans and other animals have muscles for movement.
- The digestive system starts in the mouth, moves down the oesophagus, into the stomach, through the intestines, into the anus and exits the body as waste.
- Humans have different teeth. Incisors for biting and cutting, canines for ripping and tearing and premolars, molars and wisdom teeth for grinding.
- Food chains can show the transfer of energy through producers and consumers.

Lesson 1	What is a healthy diet?
	Year 3 & 4 • To identify that humans need the right types and amount of nutrition and that they cannot make their own food; they get nutrition from what they eat. Working Scientifically: Year 3 • I can begin to gather, record and present data in a variety of ways. • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can gather, record and present data in a variety of ways. • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 2	How can you make sure you get the right nutrition?

	Year 3 & 4 • To identify that humans need the right types and amount of nutrition and that they cannot make their own food; they get nutrition from what they eat. Working Scientifically: Year 3 • I can begin to gather, record and present data in a variety of ways. • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can gather, record and present data in a variety of ways. • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 3	How much fat is in different food?
	Year 3 & 4 • To identify that humans need the right types and amount of nutrition and that they cannot make their own food; they get nutrition from what they eat. Working Scientifically: Year 3 • I can begin to set up simple practical enquiries, including using comparative and fair test enquiries. • I can begin to make systematic and careful observations. • I can, where appropriate, begin to take accurate measurements using standard units • I can begin to gather, record and present data in a variety of ways. Year 4 • I can set up simple practical enquiries, including using comparative and fair test enquiries. • I can make systematic and careful observations. • I can, where appropriate, take accurate measurements using standard units • I can gather, record and present data in a variety of ways.
Lesson 4	How much sugar is in our drinks?
	Year 3 & 4 • To identify that humans need the right types and amount of nutrition and that they cannot make their own food; they get nutrition from what they eat. Working Scientifically: Year 3 • I can begin to make systematic and careful observations. • I can begin to gather, record and present data in a variety of ways. Year 4 • I can make systematic and careful observations. • I can gather, record and present data in a variety of ways.
Lesson 5	What teeth do we have and what do they do?

	Year 3 & 4 • To identify the different types of teeth in humans and their simple functions. Working Scientifically: Year 3 • I can begin to make systematic and careful observations. • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can make systematic and careful observations. • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 6	Why do we need bones?
	Year 3 & 4 • To identify that humans and some other animals have skeletons for support and protection. • To understand that the presence of an internal skeleton is an important feature in classifying different animals. Working Scientifically: Year 3 • I can begin to gather, record and present data in a variety of ways. • I can begin to use straightforward scientific evidence to answer questions or to support my findings. Year 4 • I can gather, record and present data in a variety of ways. • I can use straightforward scientific evidence to answer questions or to support my findings.
Lesson 7	How do our bodies move?
	Year 3 & 4 • To identify that humans and some other animals have muscles for movement. Working Scientifically: Year 3 • I can begin to gather, record and present data in a variety of ways. • I can begin to use straightforward scientific evidence to answer questions or to support my findings. Year 4 • I can gather, record and present data in a variety of ways. • I can use straightforward scientific evidence to answer questions or to support my findings.
Lesson 8	What is the digestive system?
	Year 3 & 4 • To describe the simple functions of the basic parts of the digestive system in humans. Working Scientifically: Year 3

	• I can begin to gather, record and present data in a variety of ways. • I can begin to use straightforward scientific evidence to answer questions or to support my findings. • I can begin to make systematic and careful observations. • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can gather, record and present data in a variety of ways. • I can use straightforward scientific evidence to answer questions or to support my findings. • I can make systematic and careful observations. • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 9	What happens to our food?
	Year 3 & 4 • To describe the simple functions of the basic parts of the digestive system in humans. Working Scientifically: Year 3 • I can begin to gather, record and present data in a variety of ways. • I can begin to use straightforward scientific evidence to answer questions or to support my findings. Year 4 • I can gather, record and present data in a variety of ways. • I can use straightforward scientific evidence to answer questions or to support my findings.
Lesson 10	How does energy move through a food chain?
	Year 3 & 4 • To construct and interpret a variety of food chains, identifying producers, predators and prey Working Scientifically: Year 3 • I can begin to gather, record and present data in a variety of ways. • I can begin to ask relevant questions, including asking further questions from my own results. • I can begin to use different types of scientific enquiry to answer questions. Year 4 • I can gather, record and present data in a variety of ways. • I can ask relevant questions, including asking further questions from my own results. • I can use different types of scientific enquiry to answer questions.
Vocabulary	
Balanced diet, carbohydrates, protein, diary, fats, fruit and vegetables, vertebrate, invertebrate,	

muscles, incisors, canines, molars, producer, consumer, prey, predator.

Lower Key Stage 2 Science Spring 1 States of Matter
Year 3 In KS1, children learn about Seasonal Changes, including the hottest and coldest season. Children also learn that objects are made from materials in their Materials unit. Children have learnt to work as a scientist by working scientifically: Asking simple questions, observing closely, identifying and classifying, performing simple tests and working with simple data. Year 4 In Year 3, children compare and sort types of rock in their Rocks unit and learn how environments can change in their Living Things unit. Children built on their knowledge of working scientifically: Sorting and classifying, identifying similarities and differences, making predictions, setting up simple fair and comparative tests, taking accurate measurements and using results to draw simple conclusions.
Sticky Knowledge
• Solids stay in one place, can be held, keep their shape, can be cut. • Liquids can flow or be poured, change their shape but their volume stays in same. • Gases are often invisible, do not have a fixed shape and can change their shape and volume to fill a container. • Somethings can change their state of matter • Water can freeze to become a solid, melt to become a liquid • Water can evaporate to become a gas and condense to become a liquid. • Water freezes at 0 degrees celsius. Water boils at 100 degrees celsius • Water constantly moves through the water cycle. It evaporates into the sky, condenses in the clouds, falls as precipitation and collects back into the oceans.

Lesson 1	What's the difference between solids, liquids and gases?
	Year 3 & 4 • To compare and group materials together, according to whether they are solid, liquids or gases. Working Scientifically: Year 3 • I can begin to identify differences, similarities or changes when looking at simple scientific ideas and processes. • I can begin to classify with my own groups and data. Year 4 • I can identify differences, similarities or changes when looking at simple scientific ideas and processes. • I can classify with my own groups and data.

Lesson 2	Can something change its state of matter?
	Year 3 & 4 • To observe that some materials change state when they are heated or cooled. Working Scientifically: Year 3 • I can begin to identify differences, similarities or changes when looking at simple scientific ideas and processes. Year 4 • I can identify differences, similarities or changes when looking at simple scientific ideas and processes.
Lesson 3	Does everything have the same melting point?
	Year 3 & 4 • To observe that some materials change state when they are heated or cooled and measure or research the temperature at which this happens in degrees Celsius. Working Scientifically: Year 3 • I can begin to set up simple practical enquiries, including using comparative and fair test enquiries. • I can begin to make systematic and careful observations. • I can, where appropriate, begin to take accurate measurements using standard units • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can set up simple practical enquiries, including using comparative and fair test enquiries. • I can make systematic and careful observations. • I can, where appropriate, take accurate measurements using standard units • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 4	What did we find out about melting points?
	Year 3 & 4 • To observe that some materials change state when they are heated or cooled and measure or research the temperature at which this happens in degrees Celsius. Working Scientifically: Year 3 • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • I can begin to gather, record and present data in a variety of ways. Year 4 • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • I can gather, record and present data in a variety of ways.
Lesson 5	What material has the highest melting point?

	Year 3 & 4 • To observe that some materials change state when they are heated or cooled and measure or research the temperature at which this happens in degrees Celsius. Working Scientifically: Year 3 • I can begin to gather, record and present data in a variety of ways. Year 4 • I can gather, record and present data in a variety of ways.
Lesson 6	What is the water cycle?
	Year 3 & 4 • To identity the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Working Scientifically: Year 3 • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Vocabulary	
Solids, liquids, gases, states of matter, freezing, melting, evaporation, condensation, water cycle, precipitation, collection	

Lower Key Stage 2 Science Spring 2 Sound
Year 3 In KS1, children learn in their Living Things unit that animals have different body parts. Children have learnt to work as a scientist by working scientifically: Asking simple questions, observing closely, identifying and classifying, performing simple tests and working with simple data. Year 4 In Year 3, children learn about Electricity, including identifying appliances that run on electricity and use basic elements to build an electrical circuit, including a bulb and buzzer. Children built on their knowledge of working scientifically: Sorting and classifying, identifying similarities, differences, making predictions, setting up simple fair and comparative tests, taking accurate measurements and using results to draw simple conclusions.
Sticky Knowledge
• A sound is created when an object vibrates • When an object vibrates it creates sound waves that bump into the air particles around it and

into more air particles as the sound wave travels. • When the sound wave vibrations reach the ear they are funneled into the outer ear, down the ear canal, vibrate the ear drum, which vibrates the hammar, anvil and stirrup bones and then reaches the cochlea which turns them into electrical signals which travel through the auditory nerve to the brain. • High pitch sounds have fast vibrations and high sound waves. • Low pitch sounds have slower vibrations and lower sound waves.	
Lesson 1	How is a sound made?
	Year 3 & 4 • I can identify how sounds are made and recognise that vibrations from sound travel through a medium to the ear. Working Scientifically: Year 3 • I can begin to ask relevant questions, including asking further questions from my own results. • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can ask relevant questions, including asking further questions from my own results. • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 2	How do we hear?
	Year 3 & 4 • To explain how sound travels through the ear. Working Scientifically: Year 3 • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 3	How does sound travel through our ear?
	Year 3 & 4 • To explain how sound travels through the ear. Working Scientifically: Year 3 • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. Year 4 • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Lesson 4	What is the pitch of a sound?
	Year 3 & 4 • To investigate how the pitch of a sound depends on the object that produced it.

	Working Scientifically: Year 3 • I can begin to set up simple practical enquiries, including using comparative and fair test enquiries. • I can begin to make systematic and careful observations. • I can, where appropriate, begin to take accurate measurements using standard units • Year 4 • I can set up simple practical enquiries, including using comparative and fair test enquiries. • I can make systematic and careful observations.
Vocabulary	
Vibrations, sound waves, air particles, outer ear, ear canal, eardrum, hammer, anvil, stirrup, cochlea, auditory nerve, high pitch, low pitch	

Lower Key Stage 2 Science Summer Light	
Year 3 In KS1, children learn in their Plants unit that plants need light to grow and that habitats are where living things find what they need to survive in their Living Things unit. Children have learnt to work as a scientist by working scientifically: Asking simple questions, observing closely, identifying and classifying, performing simple tests and working with simple data. Year 4 In Year 3, children identify some appliances that run on electricity and build a series electrical circuit including elements like a bulb in their Electricity unit and look at the requirements for growth in their Plants unit. Children built on their knowledge of working scientifically: Sorting and classifying, identifying similarities, differences, making predictions, setting up simple fair and comparative tests, taking accurate measurements and using results to draw simple conclusions.	
Sticky Knowledge	
• We need light to see • Dark is the absence of light • A light source creates light • The sun is dangerous to the eyes and we need to protect them from the sun. • Some light can be reflected. Shiny surfaces reflect like whereas dull surfaces absorb light. • Shadows are formed when the light is blocked by an opaque object.	
Lesson 1	What is a light source?
	Year 3 & 4 • To recognise that you need light in order to see things and that dark is the absence of light. Working Scientifically:

	Year 3 • I can begin to identify differences, similarities or changes when looking at simple scientific ideas and processes. • I can begin to classify with my own groups and data. Year 4 • I can identify differences, similarities or changes when looking at simple scientific ideas and processes. • I can classify with my own groups and data.
Lesson 2	What is a reflective material?
	Year 3 & 4 • To notice that light is reflected from surfaces. Working Scientifically: Year 3 • I can begin to ask relevant questions, including asking further questions from my own results and begin to use different types of scientific enquiry to answer questions. • I can begin to set up simple practical enquiries, including using comparative and fair test enquiries. • I can begin to make systematic and careful observations. • I can, where appropriate, begin to take accurate measurements using standard units and equipment including thermometers and data loggers. • I can begin to use straightforward scientific evidence to answer questions or to support my findings. Year 4 • I can ask relevant questions, including asking further questions from my own results and use different types of scientific enquiry to answer questions. • I can set up simple practical enquiries, including using comparative and fair test enquiries. • I can make systematic and careful observations. • I can, where appropriate, take accurate measurements using standard units and equipment including thermometers and data loggers. • I can use straightforward scientific evidence to answer questions or to support my findings.
Lesson 3	Should you look at the sun?
	Year 3 & 4 • To recognise that light from the sun can be dangerous and that there are ways to protect your eyes. Working Scientifically: Year 3 • I can begin to set up simple practical enquiries, including using comparative and fair test enquiries. • I can begin to make systematic and careful observations. Year 4 • I can set up simple practical enquiries, including using comparative and fair test enquiries. • I can make systematic and careful observations.

Lesson 4	How are shadows formed? Year 3 & 4 • To recognise that shadows are formed when the light from a light source is blocked by a solid object. Working Scientifically: Year 3 • I can begin to ask relevant questions, including asking further questions from my own results. • I can begin to use different types of scientific enquiry to answer questions. • I can begin to use results to draw simple conclusions and make simple future predictions. • I can begin to use straightforward scientific evidence to answer questions or to support my findings. Year 4 • I can ask relevant questions, including asking further questions from my own results and use different types of scientific enquiry to answer questions. • I can use results to draw simple conclusions and make simple future predictions. • I can use straightforward scientific evidence to answer questions or to support my findings.
Lesson 5	Why aren't all shadows the same size? Year 3 & 4 • To find patterns that determine the size of shadows. Working Scientifically: Year 3 • I can begin to set up simple practical enquiries, including using comparative and fair test enquiries. • I can begin to make systematic and careful observations. • I can, where appropriate, begin to take accurate measurements using standard units and equipment including thermometers and data loggers. • I can begin to present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • I can begin to report my findings from enquiries including using oral and written explanations, displays, presenting results and conclusions. • I can begin to use results to draw simple conclusions and make simple future predictions and use results to suggest improvements. Year 4 • I can set up simple practical enquiries, including using comparative and fair test enquiries. • I can make systematic and careful observations. • I can, where appropriate, take accurate measurements using standard units and equipment including thermometers and data loggers. • I can present my findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.

	• I can report my findings from enquiries including using oral and written explanations, displays, presenting results and conclusions. • I can use results to draw simple conclusions and make simple future predictions and use results to suggest improvements.
Vocabulary	
Light source, UV rays, reflected, shadows, opaque	