

# Year 4 Science Curriculum



## Changing Sound

1	Exploring what sound is and discovering that sound is caused by vibrations.
2	Investigating what happens to sound when it travels through different materials.
3	Carrying out experiments to find out what happens to sound the further away you get from it.
4	Considering why it is sometimes necessary to prevent sound from travelling to the ears and to find out how soundproofing can be achieved.
5	Defining what 'pitch' is and exploring how high and low notes are produced on different instruments.
6	Investigating what happens to the pitch of notes on stringed instruments when the thickness, tightness and length of strings are altered.
7	Exploring how air can vibrate to produce sounds and how the length of the air column in wind instruments changes the pitch of that sound.



## Circuits and Conductors

1	Defining what electricity is, exploring where it comes from and how it is used.
2	Identifying the potential hazards of electricity and learning how we can stay safe around it.
3	Exploring what is needed to create a simple circuit and how a switch works.
4	Exploring electrical conductors and insulators and how they are used in different devices.
5	Creating a simple device which uses a circuit to work.



## Eating and Digestion

1	Comparing the diets of a variety of animals, as well as defining the terms 'herbivore', 'carnivore' and 'omnivore'.
2	Finding out what food chains are and exploring a variety of food chains to show the diets of different animals.
3	Defining the differences between incisors, canines and molars, and exploring their own teeth.
4	Considering the difference between a child losing a milk tooth and an adult losing an adult tooth, the consequences of both, and how to take care of our teeth.
5	Identifying the organs associated with the digestive system and where they are in the body.
6	Exploring the journey of food from mouth to toilet and identifying the function of organs associated with digestion.



## States of Matter

1	Identifying and grouping objects depending on whether they are a solid or a liquid.
2	Exploring gasses and how they are different to liquids and solids.
3	Investigating how the particles in solids, liquids and gases behave and how this affects the overall state of the material.
4	Exploring how different materials have different melting points.
5	Looking at the process of evaporation and how we can use this process in our everyday lives.
6	Exploring the process of condensation as the opposite to evaporation.
7	Consolidating understanding of evaporation and condensation by studying the water cycle.



## Living in Environments

1	Defining what a habitat is, and exploring what habitat a particular animal might live in and why.
2	Grouping animals according to various criteria, identifying similarities and differences between them.
3	Investigating classification keys and how scientists classify animals into broad groups, such as mammals, amphibians, birds, reptiles and fish.
4	Using classification keys to identify a variety of animals from the UK and around the world.
5	Grouping a variety of different plants according to their characteristics using both Venn and Carroll diagrams
6	Considering the positive and negative impacts of humans on the environment.

Notes:

Year 4   Overview Objectives	
<b>Living in Environments</b>	<ul style="list-style-type: none"> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• recognise that living things can be grouped in a variety of ways</li> <li>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>• recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul>
<b>Eating and Digestion</b>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• using straightforward scientific evidence to answer questions or to support their findings</li> <li>• describe the simple functions of the basic parts of the digestive system in humans</li> <li>• identify the different types of teeth in humans and their simple functions</li> <li>• construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>
<b>States of Matter</b>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• using straightforward scientific evidence to answer questions or to support their findings</li> <li>• compare and group materials together, according to whether they are solids, liquids or gases</li> <li>• 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 (°C)</li> <li>• identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>

## Year 4 | Overview Objectives

### Changing Sound

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- using straightforward scientific evidence to answer questions or to support their findings
- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear
- find patterns between the pitch of a sound and features of the object that produced it
- find patterns between the volume of a sound and the strength of the vibrations that produced it
- recognise that sounds get fainter as the distance from the sound source increases

### Circuits and Conductors

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors

# Year 4 Science Curriculum

Year 4 Objectives	Living In Environments	Eating and Digestion	States of Matter	Changing Sound	Circuits and Conductors
asking relevant questions and using different types of scientific enquiries to answer them					
setting up simple practical enquiries, comparative and fair tests					
making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers					
gathering, recording, classifying and presenting data in a variety of ways to help in answering questions					
recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables					
reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions					
using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions					
identifying differences, similarities or changes related to simple scientific ideas and processes					
using straightforward scientific evidence to answer questions or to support their findings					
recognise that living things can be grouped in a variety of ways					
explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment					
recognise that environments can change and that this can sometimes pose dangers to living things					
describe the simple functions of the basic parts of the digestive system in humans					
identify the different types of teeth in humans and their simple functions					
construct and interpret a variety of food chains, identifying producers, predators and prey					
compare and group materials together, according to whether they are solids, liquids or gases					
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 (°C)					
identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature					
identify how sounds are made, associating some of them with something vibrating					
recognise that vibrations from sounds travel through a medium to the ear					
find patterns between the pitch of a sound and features of the object that produced it					
find patterns between the volume of a sound and the strength of the vibrations that produced it					
recognise that sounds get fainter as the distance from the sound source increases					
identify common appliances that run on electricity					
construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers					
identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery					
recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit					
recognise some common conductors and insulators, and associate metals with being good conductors					

# Changing Sound : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
<b>Lesson 1</b>	To find out that sounds are made when objects and materials vibrate.	Children will learn about how sounds are created, then explore the way sounds are produced by a variety of instruments or resonant objects.	<ul style="list-style-type: none"> <li>Do children know that sounds are made when objects or materials vibrate?</li> <li>Can children make careful observations?</li> <li>Can children draw conclusions about sounds from their observations?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 1A/1B/1C</li> <li>Variety of musical instruments if available</li> <li>Rice and drum; elastic bands; tuning fork and beaker of water; rulers; stereo speakers (if available)</li> <li>Question Cards (FSD? activity only)</li> </ul>
<b>Lesson 2</b>	To investigate whether sounds can travel through different materials.	Children will learn about how sounds travel through different materials. They will give reasons why they think some materials will transmit sound better/ worse than others, then investigate.	<ul style="list-style-type: none"> <li>Do children know that vibrations from sound sources travel through different materials to the ear?</li> <li>Do children know sound can travel through solids, liquids and gases?</li> <li>Do children know that some materials allow sound to pass through them more easily than others?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 2A/2B/2C</li> <li>Drum/cymbal/something else loud!</li> <li>Waterproof buzzer or ticking clock</li> <li>Boxes with lid, water and sand with suitable containers (FSD? activity only)</li> <li>Pre-prepared 'string telephones'</li> </ul>
<b>Lesson 3</b>	To explore the relationship between distance and volume.	Children will explore ways in which sounds change as you move further away from its source. They will suggest reasons for their findings.	<ul style="list-style-type: none"> <li>Do children know that sounds get fainter as the distance from the sound source increases?</li> <li>Can children carry out an investigation to explore what happens to sound as it gets further away?</li> <li>Can children draw conclusions and describe what they have found out?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 3A/3B</li> <li>Objects to make sounds</li> <li>Metre sticks, tape measures, etc.</li> </ul>
<b>Lesson 4</b>	To find out that some materials are effective in preventing vibrations from sound sources reaching the ear.	Children will learn about why it is sometimes necessary to prevent sounds from travelling, then investigate the soundproofing effectiveness of a range of materials.	<ul style="list-style-type: none"> <li>Can children name some of the reasons why preventing sound to travel is sometimes important?</li> <li>Can children plan a test to measure how well different materials muffle sound?</li> <li>Can children draw conclusions about which materials muffle sound the best?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 4A/4B</li> <li>Buzzers/rattles/ticking clocks</li> <li>Materials to test (e.g. foam sheets, fabric, newspaper, bubble wrap, tin foil, kitchen roll, clingfilm, paper towels, cotton wool, etc.)</li> </ul>
<b>Lesson 5</b>	To investigate how sounds can be different pitches and volumes.	Children will learn about pitch and volume, then investigate ways in which they may be altered by a variety of instruments or resonant objects.	<ul style="list-style-type: none"> <li>Do children know that the term 'pitch' describes how high or low a sound is?</li> <li>Can children recognise changes in pitch and identify high and low notes?</li> <li>Can children investigate different instruments and make generalisations about pitch?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 5A/5B/5C</li> <li>Xylophones/glockenspiels</li> <li>Books, CD ROMs, access to internet, etc.</li> <li>Variety of drums (FSD? activity only)</li> </ul>
<b>Lesson 6</b>	To find out how the length, thickness and tightness of a string affects its pitch.	Children will consider how the pitch of notes produced by stringed instruments is altered, then investigate further by experimenting with instruments or by making instruments.	<ul style="list-style-type: none"> <li>Do children know that the pitch of a stringed instrument depends on the length, thickness and tightness of the string?</li> <li>Can children suggest ways of testing what happens to the pitch of a string when you alter the length, tightness and thickness?</li> <li>Can children draw conclusions from their observations?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 6A/6B/6C</li> <li>Variety of stringed instruments</li> <li>Elastic bands, boxes, tubes, etc. (FSD? activity only)</li> </ul>
<b>Lesson 7</b>	To find out how sounds can be made by air vibrating and how to change the pitch of notes produced by vibrating air.	Children will learn how sounds can be made by air vibrating, then explore ways in which the pitch of these sounds can be altered.	<ul style="list-style-type: none"> <li>Do children know that sounds can be made by air vibrating?</li> <li>Can children suggest ways to change the pitch of a sound made by air?</li> <li>Can children describe how to change the length of the air column vibrating to change pitch?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 7A/7B/7C</li> <li>Empty bottles</li> <li>Water</li> <li>Xylophones/glockenspiels</li> <li>Recorders (FSD? activity only)</li> </ul>

# Circuits and Conductors : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
<b>Lesson 1</b>	To identify common appliances that run on electricity.	In this initial lesson the children will discuss what electricity is and how we use it in our day-to-day lives. They will think about which appliances around them use electricity and begin to think about batteries and plugs.	<ul style="list-style-type: none"> <li>• Are children able to identify common appliances powered by electricity?</li> <li>• Can children say what we use electricity for and why it is important?</li> <li>• Are children able to describe electricity as a form of energy?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Worksheet 1A/1B/1C</li> <li>• Sorting Sheet 1A</li> <li>• Electricity Hunt Sheet 1A</li> </ul>
<b>Lesson 2</b>	To understand how to keep safe around electrical appliances.	This lesson leads a discussion with your class about how we can all stay safe when using electrical devices. The children will have the opportunity to spot potential hazards and discuss how they can be made safe.	<ul style="list-style-type: none"> <li>• Can children explain some of the dangers of electricity?</li> <li>• Are children able to explain the difference between battery and mains electricity?</li> <li>• Are children able to say how they can stay safe around electricity?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Worksheet 2A/2B/2C</li> <li>• Poster Template sheet (FSD? activity only)</li> </ul>
<b>Lesson 3</b>	To construct simple circuits.	This lesson challenges your class to begin constructing simple circuits with single or multiple components, observing what they see as they do so. The children will learn about what a complete circuit is, as well as the names of different components and short circuits.	<ul style="list-style-type: none"> <li>• Can children label the components of a circuit?</li> <li>• Are children able to construct simple circuits?</li> <li>• Can children make observations about simple circuits?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Circuits equipment</li> <li>• Picture Cards 3A</li> <li>• Worksheet 3A/3B</li> <li>• Challenge Cards 3A</li> <li>• Circuit Cards (FSD activity only)</li> </ul>
<b>Lesson 4</b>	To recognise common conductors and insulators.	In this lesson the children will discuss how electricity can flow through, or not flow through, different materials. They will experiment with, and sort materials based on if they are electrical conductors or insulators, making predictions about the materials. Alternatively, they can make a switch using given objects to use as a buzzer in a quiz game.	<ul style="list-style-type: none"> <li>• Can children set up a fair test?</li> <li>• Can children make predictions about whether a material is a conductor or insulator?</li> <li>• Are children able to say whether a material is a conductor or insulator?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Circuits equipment</li> <li>• Worksheet 4A/4B/4C</li> <li>• Picture Card 4A</li> <li>• Quiz Questions 4A (FSD? only activity)</li> </ul>
<b>Lesson 5</b>	To make a simple device which includes a circuit.	In this lesson the children will use all they have learnt about electrical components to create an electrical circuit which will be used to power a simple device. The children will need to work together to discuss and figure out how they can use a circuit in their device.	<ul style="list-style-type: none"> <li>• Can children create a simple circuit with a switch?</li> <li>• Are children able to create a simple, functioning device which uses electricity?</li> <li>• Can children troubleshoot and solve problems with their circuit?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Challenge Card 5A/5B/5C</li> <li>• Flexible, thick wire</li> <li>• Circuits equipment including bulbs and buzzers</li> <li>• Challenge Card 5D/5E (FSD? activity only)</li> <li>• Sturdy cardboard (FSD? activity only)</li> <li>• Worksheet 5A (FSD? activity only)</li> <li>• End of Unit Quiz</li> </ul>

# Eating and Digestion : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
<b>Lesson 1</b>	To be able to identify and classify carnivores, herbivores and omnivores.	Children will identify similarities and differences between the diets of different organisms, then sort and describe them using technical vocabulary such as herbivore, carnivore, and omnivore.	<ul style="list-style-type: none"> <li>Can children explain why all animals, including humans, need to eat?</li> <li>Can children identify animals that are carnivores, herbivores and omnivores?</li> <li>Can children classify animals according to their diet?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 1A/1B/1C</li> <li>Animal Cards A/B</li> <li>Books, access to internet, etc.</li> <li>Challenge Cards (FSD? activity only)</li> </ul>
<b>Lesson 2</b>	To be able to construct and interpret a variety of food chains.	Children will learn about food chains, then organise a variety of organisms using food chains.	<ul style="list-style-type: none"> <li>Do children know what the terms 'producer' and 'consumer' mean in relation to food chains?</li> <li>Can children interpret food chains?</li> <li>Can children construct food chains?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 2A/2B/2C/2D/2E</li> <li>Organisms Sheet</li> <li>Name Tags (FSD? activity only)</li> </ul>
<b>Lesson 3</b>	To identify the different types of teeth in humans and identify their functions.	Children will identify different types of human teeth and their functions. They will then sort, draw, label or describe teeth.	<ul style="list-style-type: none"> <li>Can children identify the different types of human teeth?</li> <li>Do children know that the shape of teeth make them useful for different purposes?</li> <li>Can children suggest reasons why animals might have different types of teeth?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 3A/3B/3C/3D</li> <li>Mirrors (FSD? activity only)</li> </ul>
<b>Lesson 4</b>	To explore different ways of keeping teeth healthy.	Children will learn about what happens to teeth during the lifetime of humans, and consider ways in which we can ensure our teeth stay healthy.	<ul style="list-style-type: none"> <li>Do children know that humans have two sets of teeth during their lifetime?</li> <li>Can children explain why it is important to look after teeth?</li> <li>Can children describe ways in which people can make sure their teeth stay healthy?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 4A</li> <li>Poster Template</li> <li>Information Sheet</li> </ul>
<b>Lesson 5</b>	To investigate how the digestive system works.	Children will start to learn about the digestive system: its organs and their functions. They will then use a variety of sources to learn more and answer questions.	<ul style="list-style-type: none"> <li>Can children ask relevant questions?</li> <li>Can children use different sources of information to find the answers to questions they have asked?</li> <li>Can children name some of the organs associated with the digestive system?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 5A/5B/5C</li> <li>Fact Cards</li> <li>Additional information sources, e.g. books/posters</li> <li>Question Cards (FSD? activity only)</li> </ul>
<b>Lesson 6</b>	To be able to describe the functions of the basic parts of the digestive system.	Children will continue to learn, in greater depth, about the organs of the digestive system and their functions. They will then either draw and label diagrams to show what they have learned, or conduct a digestion experiment.	<ul style="list-style-type: none"> <li>Can children name the organs associated with the digestive system?</li> <li>Can children describe the basic functions of the organs associated with the digestive system?</li> <li>Can children describe the process of digesting food?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 6A/6B/6C/6D</li> <li>Label Cards</li> <li>Help Sheet (FSD? activity only)</li> <li>Equipment for experiment - see Help Sheet (FSD? activity only)</li> <li>End of Unit Quiz</li> </ul>



# Living in Environments : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
<b>Lesson 1</b>	To be able to identify a variety of habitats and explore why organisms live in different habitats.	Children will identify habitats, and consider why their conditions are important for the animals living in them. They will then either describe habitats in their own words, or explore a local habitat.	<ul style="list-style-type: none"> <li>Do children know what a habitat is?</li> <li>Can children identify a variety of habitats?</li> <li>Do children know that animals live in habitats that are suited to their needs?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Habitat Cards</li> <li>Riddle Cards</li> <li>Animal Cards</li> <li>Worksheet 1A/1B (FSD? activity only)</li> </ul>
<b>Lesson 2</b>	To be able to group organisms according to their characteristics.	Children will organise animals into groups according to some of their characteristics. They may then either continue to sort animals according to their own criteria, or examine some animals and group them based on observations.	<ul style="list-style-type: none"> <li>Can children identify similarities and differences between similar organisms?</li> <li>Can children group animals and explain the criteria that has been used to sort them?</li> <li>Can children make careful observations to identify the characteristics of different organisms?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 2A/2B/2C/2D</li> <li>Animal Cards</li> <li>Pots, trowels, etc. (FSD? activity only)</li> <li>Microscopes/hand lenses (FSD? activity only)</li> </ul>
<b>Lesson 3</b>	To be able to classify animals into specific groups according to their characteristics.	Children will use classification keys to identify and sort animals into groups. They may also study a range of sources to find out about a particular group of animals.	<ul style="list-style-type: none"> <li>Do children know that animals can be categorised into broad groups according to their characteristics?</li> <li>Can children use a classification key to help them identify which group an animal belongs to?</li> <li>Can children identify a variety of animals that are vertebrates, invertebrates, mammals, amphibians, insects, reptiles, fish and birds?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 3A</li> <li>Animal Cards A/B/C</li> <li>Animal Classification Key</li> <li>Challenge Cards (FSD? activity only)</li> </ul>
<b>Lesson 4</b>	To be able to use a classification key to identify animals.	Children will identify a range of animals from different environments using classification keys. Optionally, they may create and test their own classification keys.	<ul style="list-style-type: none"> <li>Can children use a classification key to identify unfamiliar animals?</li> <li>Can children use close observations to identify an animal's characteristics?</li> <li>Can children create their own classification keys to help identify an animal?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 4A/4B/4C</li> <li>British Animals Classification Key A/B</li> <li>Animal Cards (FSD? activity only)</li> </ul>
<b>Lesson 5</b>	To be able to identify and classify a variety of British plants.	Children will use Venn Diagrams and Carroll diagrams to sort plants according to some of their characteristics. Some children may choose their own ways of sorting and classifying plants, too.	<ul style="list-style-type: none"> <li>Can children group a variety of plants according to their characteristics?</li> <li>Can children use a classification key to identify plants?</li> <li>Can children use other sources to help them identify a variety of local plants?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 5A/5B</li> <li>Plant Cards</li> <li>Digital cameras (FSD? activity only)</li> <li>Books, access to internet, etc. (FSD? activity only)</li> </ul>
<b>Lesson 6</b>	To explore the human impact on habitats and environments.	Children will consider ways in which animals living in environments are affected by human behaviour, then suggest ways in which we can help protect and sustain habitats.	<ul style="list-style-type: none"> <li>Do children know how one change in a habitat can affect all the organisms within that environment?</li> <li>Can children list positive ways in which humans can impact the environment?</li> <li>Can children list negative ways in which humans can impact the environment?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheet 6A/6B/6C</li> <li>Scenario Cards</li> </ul>



# States of Matter : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
<b>Lesson 1</b>	To compare and group materials together according to whether they are solids or liquids.	Challenge your class to define what solids and a liquids are and sort materials into groups based on their state. Children will discuss the different items that may not seem to fit and look closely at how they're made up including pourable solids such as rice or sand. Alternatively, explore and make observations of non-newtonian fluids as you make slime together.	<ul style="list-style-type: none"> <li>• Can children provide a definition of solid or liquid?</li> <li>• Are children able to sort objects into solids and liquids?</li> <li>• Can children explain why they have placed an object into either group?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Object Cards 1A</li> <li>• Sorting Cards 1A/1B/1C</li> <li>• Worksheet 1A/1B</li> <li>• Slime Recipe Cards 1A (FSD? activity only)</li> <li>• Ingredients for slime (FSD? activity only)</li> <li>• Challenge Cards 1A (FSD? activity only)</li> <li>• Worksheet 1C (FSD? activity only)</li> </ul>
<b>Lesson 2</b>	To identify and explore the properties of gases.	Take a look at the third state that a material can be in and explore if gases have mass. Look at the different ways that gases are used in everyday life and how their different properties make them useful for different purposes.	<ul style="list-style-type: none"> <li>• Can children name some of the properties of gases?</li> <li>• Are children able to write a scientific definition of a gas?</li> <li>• Can children use their scientific knowledge to draw conclusions about their experiment's results?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Bottles with lids</li> <li>• Sponges</li> <li>• Containers of water</li> <li>• Experiment Card 2A</li> <li>• Worksheet 2A/2B/2C</li> <li>• Fizzy drink</li> <li>• Electronic scales</li> <li>• Syringes of different sizes (FSD? activity only)</li> <li>• Plastic tubes* (FSD? activity only)</li> <li>• Balloons (FSD? activity only)</li> <li>• Pneumatics Card 2A (FSD? activity only)</li> <li>• Worksheet 2D (FSD? activity only)</li> </ul>
<b>Lesson 3</b>	To observe that materials change state when they are heated or cooled.	In this lesson the children will take a closer look at the particles in solids, liquids and gases and how they behave in these states. They will then use this knowledge to describe what happens when solids and liquids freeze and melt.	<ul style="list-style-type: none"> <li>• Can children describe the difference between the particles in solids, liquids and gases?</li> <li>• Can children describe what melting is?</li> <li>• Can children describe what freezing is?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Worksheet 3A/3B/3C</li> <li>• Recipe Cards 3A (FSD? activity only)</li> <li>• Ingredients (FSD? activity only)</li> <li>• Cooking equipment (FSD? activity only)</li> <li>• Party Cards 3A (FSD? activity only)</li> </ul>
<b>Lesson 4</b>	To research the temperature in degrees Celsius (°C) at which materials change state.	This lesson challenges your class to research the melting points of different materials. They can use the internet to find the melting points of materials such as gallium, olive oil and gold. Alternatively, have your class design and reflect on an investigation about the melting points of different chocolate.	<ul style="list-style-type: none"> <li>• Do children understand that different materials have different freezing/melting points?</li> <li>• Can children use their research skills to find the melting points of less common materials?</li> <li>• Can children evaluate an experiment's fairness and suggest improvements?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Access to the internet</li> <li>• Sorting Cards 4A</li> <li>• Worksheet 4A/4B/4C</li> <li>• Experiment Card 4A (FSD? activity only)</li> <li>• Worksheet 4D (FSD? activity only)</li> <li>• Milk, white and dark (80% cocoa) chocolate (FSD? activity only)</li> <li>• Warm water (FSD? activity only)</li> <li>• Timers (FSD? activity only)</li> <li>• Foil trays (FSD? activity only)</li> </ul>
<b>Lesson 5</b>	To understand the process of evaporation.	In this lesson the children will be asked to focus on the process of a liquid turning into a gas. They will think about the everyday examples of evaporation including puddles 'disappearing' throughout the day as well as the cooling effects of sweat on our skin. They will discuss the differences between evaporating and boiling as well as highlighting the boiling point of water. They are challenged to conduct an investigation into the rates of evaporation and how heat and air can affect them.	<ul style="list-style-type: none"> <li>• Can children describe the process of evaporation?</li> <li>• Can children give an everyday example of water evaporating?</li> <li>• Can children describe a way to increase the rate of evaporation?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Hand sanitiser</li> <li>• Teacher Notes 5A</li> <li>• Worksheet 5A/5B</li> <li>• Experiment equipment</li> <li>• Challenge Card 5A (FSD? activity only)</li> <li>• Ideas Sheet 5A (FSD? activity only)</li> <li>• Investigation Planner 5A (FSD? activity only)</li> <li>• Investigation equipment (FSD? activity only)</li> <li>• Design Sheet 5A (FSD? activity only)</li> </ul>

# States of Matter : Science : Year 4

	Learning Objective	Overview	Assessment Questions	Resources
<b>Lesson 6</b>	To understand the process of condensation.	In this lesson the children will look at the opposite process to evaporation: condensation. They will think about what causes water to condense and look at some examples of this. They are then challenged to recreate a situation where they can see water condensing, including its use in a solar still to remove the salt from sea water.	<ul style="list-style-type: none"> <li>• Can children name each of the ways a material can change state?</li> <li>• Are children able to describe condensation and when it happens?</li> <li>• Can children create a diagram to help them explain condensation?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Teacher Notes 6A</li> <li>• Cling film or other flexible plastic</li> <li>• Ice cubes</li> <li>• Worksheet 6A/6B/6C</li> <li>• Challenge Card 6A (FSD? activity only)</li> <li>• Worksheet 6D (FSD? activity only)</li> <li>• Salt water (FSD? activity only)</li> <li>• Bowls and beakers (FSD? activity only)</li> <li>• Small weights (FSD? activity only)</li> </ul>
<b>Lesson 7</b>	To identify the part played by evaporation and condensation in the water cycle.	This final lesson draws upon the children's learning of evaporation and condensation to describe the water cycle. They will look at four simplified steps of the water cycle and how these processes play a part.	<ul style="list-style-type: none"> <li>• Do children know what the water cycle is?</li> <li>• Can children name the different stages of the water cycle?</li> <li>• Do children know that evaporation and condensation are processes that can be reversed?</li> </ul>	<ul style="list-style-type: none"> <li>• Slides</li> <li>• Teacher Notes 7A</li> <li>• Worksheet 7A/7B</li> <li>• Word Bank 7A</li> <li>• Water Cycle Diagram 7A (FSD? activity only)</li> <li>• Challenge Card 7A (FSD? activity only)</li> <li>• Sealable sandwich bags or plastic wallets (FSD? activity only)</li> </ul>

