Year 4 – States of Matter

Term – Autumn

National Curriculum	*Pupils should be taught to:* • **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.**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Question
1	**Compare and group materials together, according to whether they are solids, liquids or gases**	Children will be able to sort materials into solid, liquids and gases.	- Match states to their properties - Demonstrate how the particles behave in the different states - Identify solids, liquids and gases and understand their properties	Identifying, Grouping and Classifying sort materials into solid, liquids and gases.	Solid Liquid Gas Particles State Material Properties	*Name 1 solid, 1 liquid and 1 gas*
2	**Compare and group materials together, according to whether they are solids, liquids or gases**	Children will be able to investigate gases and explain their properties.	- Identify the materials children can see on a bottle of fizzy drink - Investigate the weight of carbon dioxide in each of the different drinks	Pattern Seeking	Carbon dioxide Weight Mass	*Is carbon dioxide a solid, liquid or gas?* *Does it have any mass?*
3	**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)**	Children will be able to investigate how heating and cooling can change a material's state.	- Match materials with melting and freezing points - Investigate and observe how long it takes for chocolate to melt at different temperatures	Observation Over Time investigate how heating and cooling can change a material's state.	Melt Freeze Thermometer Temperature	*What states of matter are chocolate before and after melting?*

4	**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)**	Children will be able to explore how water can change state into a solid, liquid or gas.	- Match the process with the state of water - Ice cube investigation, reversing changes and salt and ice- identify the different states of water and the processes that occurred in each activity.	Comparative Testing	Condense Evaporate Process Ice Water vapour Water	*Which process describes the change from water to steam?*
5	**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)**	Children will be able to display results and conclusions by investigating the effect of temperature on drying washing.	- Investigate whether the temperature affects how fast towels dry. - Draw a line graph to show their results.	Observation Over Time	Evaporation Dry Energy Heat	*What were the results of your investigation?*
6	**To identify the part played by evaporation and condensation in the water cycle**	Children will be able to identify and describe the different stages of the water cycle	- Discuss and label each part of the water cycle. - Create a mini water world to show evaporation, condensation, precipitation and collection. - Create a water cycle spinner to explain each stage of the water cycle.	Observation Over Time	Precipitation Collection Clouds Sleet Hail	*Which of these is not part of the water cycle: condensation, precipitation, contemplation, evaporation*
	Assessment		-			

Year 3 – Animals including Humans **Term – Autumn**

National Curriculum	*Pupils should be taught to:* • **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.**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Question
1	**Describe the simple functions of the basic parts of the digestive system in humans.**	Children will be able to identify the parts of the digestive system and their function	- Identify and label the different parts of the digestive system - Identify where the main parts of the digestive system are in the body - Identify the functions of the digestive system	Identifying, Grouping and Classifying Name parts of the human body that make up the digestive system. Research Use an eBook to find out about the different parts of the digestive system along with their functions.	**Teeth** **Digest** **Digestion** **Nutrients** **Organ** **Mouth** **Tongue** **Salivary** **Gland** **Saliva** **Oesophagus** **Stomach** **Liver** **Gall Bladder** **Pancreas** **Duodenum** **Small Intestine** **Large Intestine** **Rectum** **Anus** **Faeces** **Bile** **Enzymes**	*Which are the main parts of the digestive system? Why does the small intestine need to be so long?*
2	**Describe the simple functions of the basic parts of the digestive system in humans**	Children will be able to demonstrate and explain the process of digestion	- Order the key steps of the digestive system - Carry out their own demonstration of the digestion process - Explain and justify the importance of a particular organ in the digestive system	Research Use an eBook to learn more about the digestive process to then put the stages in the correct order and explain the process. Identifying	**Peristalsis** **Chyme**	*Which is the most important organ in the digestive system? Why do you think so?*

				Identify parts in the digestive system and put them in the correct order.		
3	**Identify the different types of teeth in humans and their simple functions**	Children will be able to discuss how to keep teeth healthy; plan and set up an investigation into tooth decay	- Explain how to look after their teeth and what tooth decay is - Tooth decay experiment to model the effect of sugary drinks on teeth	Observation Over Time Observe the effect of different liquids on an egg shell over time. Comparative Testing Set up and carry out a comparative test investigating tooth decay, using eggs as a model for teeth. Pattern seeking Investigate patterns in tooth decay, exploring how the amount of sugar in a drink affects an egg shell. Research Use an eBook to find the answers to questions about the importance of looking after teeth.	**Dental Plaque** **Enamel** **Tooth Decay**	*Why is it important to look after baby teeth even though they are replaced?*
4	**Identify the different types of teeth in humans and their simple functions.**	Children will be able to draw conclusions about keeping teeth healthy; to identify and examine different types of teeth and their functions.	- Children to label and name the different types of teeth and explain their function - Create their teeth out of clay or marshmallows	Pattern seeking Investigate patterns in tooth decay, exploring how the amount of sugar in a drink affects an egg shell. Research	**Baby (Milk) Teeth** **Adult Teeth** **Incisor** **Canine** **Premolar** **Molar** **Wisdom Teeth**	*Which type of tooth could be represented as a pestle and mortar? Why?*

				Use an eBook to find the answers to questions about the importance of looking after teeth and the different types of teeth. Comparative Testing Set up and carry out a comparative test investigating tooth decay, using eggs as a model for teeth. Identifying, Grouping and Classifying Identify and name different types of teeth in the human mouth.		
5	**Construct and interpret a variety of food chains, identifying producers, predators and prey**	Children will be able to construct food chains for different habitats and explain findings using the correct scientific language.	- Identify any animals that are predators - Define the words predator, prey, herbivore, carnivore and omnivore - Explain what the food chain is showing - Construct a food chain of a given habitat	Identifying, Grouping and Classifying Identify animals and plants and where they belong in a food chain. Research Use the Information Mats to find out about animals living in different habitats to then construct food chains.	**Food Chain** **Producer** **Consumer** **Predator** **Prey** **Herbivore** **Carnivore** **Omnivore** **Scavenger** **Decomposer** **Energy** **Nutrition** **Habitat** **Food Web**	*Can animals be prey and predators? Explain and justify.*
6	**Construct and interpret a variety of food chains, identifying producers, predators and prey**	Children will be able to compare the teeth of different animals and link this with their role in a food chain.	- Identify animals that are carnivores, herbivores and omnivores by looking at their teeth - Identify the types of teeth they would expect a herbivore or carnivore to have - Explain the similarities and differences between the teeth of a herbivore,	Research Use an eBook to learn about animal teeth to help complete an activity identifying animals based on their teeth and naming animal teeth. Identifying, Grouping and Classifying	**Carnassial Teeth** **Diet**	*Explain why humans have both molars and canines*

			carnivore and an omnivore	Name teeth in animals and identify animals based on their teeth. Classify teeth/jaw bones of animals based on their diets.		
7	Assessment					

Year 4 – Sound **Term – Spring**

National Curriculum	*Pupils should be taught to:* • **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**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Question
1	**Identify how sounds are made,** **associating some of them with something vibrating**	Children will be able to describe and explain sound sources around school	- Feel vocal cords vibrating as they speak - School survey to see sound levels around the school and identify what is vibrating to make the sound	Identifying Identify sound sources around school	Sound Vibration Volume	***How are sounds made?***
2	**Identify how sounds are made,** **associating some of them with something vibrating**	Children will be able to explain how different sounds travel	- Children find a link between the size of the vibrations and the loudness of a sound. - Explain how the ear works and how we hear sounds - Create a video explaining how people hear and how sound travels	Identifying Identify how sounds are made Pattern Seeking Find patterns between the volume of a sound and the strength of the vibrations that produced it	Amplitude Loud Quiet Travel Wave Particles Ear	***Loud sounds are created by small vibrations. True or False?***
3	**Recognise that vibrations from sounds travel through a medium to the ear** **To find patterns between the**	Children will be able to explore ways to change the pitch of a sound.	- Identify how different instruments make different sounds - Children spot common features that cause high and low sounds - Create a set of pan pipes using straws	Pattern Seeking To find patterns between the pitch of a sound and features of the object that produced it	High Low Pitch	***To make a high pitched sound, a guitar needs…..***

	pitch of a sound and features of the object that produced it					
4	**Recognise that vibrations from sound travel through a medium to the ear** **Find patterns between the pitch of a** **sound and features of the object that produced it**	Children will be able to identify how sounds change over a distance.	- Identify that sounds get quieter as the distance between the sound source and the listener increases - Create a string telephone and explain how it works.	Pattern Seeking Find patterns between the pitch of a sound and features of the object that produced it	Distance Telephone Transmit	***As you get further from a sound, it gets louder. True or False?***
5	**Recognise that vibrations from sounds travel through a medium to the ear**	Children can explain how different sounds travel and investigate ways to absorb sound.	- Select and identify the best material to soundproof their studio - Identify the best material for absorbing sound	Comparative testing Investigate the best material for absorbing sound	Vibrate Soundproof Absorb	***Describe the properties of a material that absorbs sound well***
6	**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**	Children will make a musical instrument to play different pitches and loudness.	- Create a musical instrument that can change pitch and loudness and play different sounds.			
	Assessment		-			

Year 4 – Living Things and Their Habitats

Term – Spring

National Curriculum	*Pupils should be taught to:* • **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.**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Questions
1	**Recognise that living things can be grouped in a variety of ways**	Children will be able to group living things in a range of ways.	- Generate different criteria to sort animals into sub groups using Venn and Carroll diagrams (i.e. Venn diagram to sort flightless birds and birds that can fly) - Grouping animals quiz – Are the animals grouped correctly?	**Grouping and Classifying** Sorting living things into groups- Venn and Carroll diagrams Generate criteria to sort living things	Organism Criteria Venn diagram Carroll diagram.	*Name 2 animals that would fit in these categories: Flightless birds and Birds that can fly*
2	**Explore and use classification keys to help group, identify and name a variety of living things in their local** **and wider environment**	Children will be able to generate questions to use in a classification key to sort **vertebrates**.	- Sort vertebrates into amphibians, birds, fish, mammals and reptiles - Generate questions to sort vertebrates using a branching key - Play 20 questions to guess an animal	**Identifying** Identify vertebrates by observing their similarities and differences **Grouping and Classifying** Group vertebrates into amphibians, birds, fish, mammals and reptiles	Variation Classification Vertebrates Invertebrates	*Name an amphibian and a reptile*

3	**Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment**	Children will be able to use keys to identify **invertebrates** found in the local environment	- Identify the difference between invertebrates (characteristics) - Go on an invertebrate hunt around the **school grounds** – find, identify and name. - Examine a captured invertebrate - Draw a labelled diagram. - Use the classification key to identify their specimen	**Identifying** Identify invertebrates by looking at their characteristics **Grouping and Classifying** Use a key to name invertebrates	Specimen Invertebrate Thorax Abdomen Antenna Segmented Wing Case Mandible Proboscis Prolegs	*What makes an animal an invertebrate?*
4	**To explore and use classification keys to help group, identify and name a variety of living things in their local** **and wider environment**	Children will be able to create a classification key	- Sort a list of descriptions into characteristics of an animal and those that are not. - Fill in a classification table with ticks and crosses to show which living thing has each characteristic - Complete a classification key on https://www.j2e.com/jit5#branch	**Identifying** Identify the characteristics of living things **Grouping and Classifying** Use the characteristics of living things to sort them using a classification key	Classification Characteristic Key	
5	**Recognise that environments can change and that this can sometimes pose dangers to living things**	Children will be able to identify positive and negative changes to the local habitat	- In pairs, list the threats to local habitats. - Outdoor visit to a local habitat (park) sketch a map of the habitat, drawing and labelling any environmental dangers - Come up with an idea that will help the local habitat.	**Identifying** Identify dangers to wildlife in the local environment	Habitat Environment Wildlife Change Danger	*Give one threat to the local habitat and a solution*
6	**Recognise that environments can change and that** **this can sometimes pose dangers to living things**	Children will be able to describe environmental dangers to endangered species	- Give examples of environmental changes and how they affect living things. - Choose an endangered animal to research and write about the environmental dangers that it faces. - Present their findings	**Research** Write a report about information gathered through research	Endangered Extinct Conservation	*Why are some animals endangered?*
7	**Assessment**					

Year 4 – Electricity **Term – Summer**

National Curriculum	*Pupils should be taught to:* • **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 bulb lights in a simple series circuit** • **recognise some common conductors and insulators, and associate metals with being good conductors.**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Question
1	**Identify common appliances that run on electricity**	Children will be able to classify and present data, identifying common appliances that run on electricity.	- Identify common appliances in the home - Identify electrical and non-electrical appliances - Identify whether their appliances are mains powered or battery powered	**Identifying, Grouping and Classifying** Group and classify things (appliances)	Appliance Mains Battery Electricity	*Name 2 electrical appliances and explain whether they are mains or battery powered*
2	**Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires,** **bulbs, switches and buzzers.**	Children will be able to identify circuit components and build working circuits.	- Identify the different components of a circuit - Build a working circuit and draw labelled diagrams of them - Explain how to build a working series circuit.	**Identifying, Grouping and Classifying** Identify the different components of a circuit	Circuit Series Circuit Bulb Wire Buzzer Switch Cell Battery Component Diagram	*Draw the symbol for a battery.*
3	**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.**	Children will be able to investigate whether circuits are complete or incomplete.	- Explain how an energy ball works. - Define the words conductor and circuit and explain what makes a complete circuit - Identify incomplete and complete circuits and explain how to fix the incomplete ones.	**Pattern Seeking** Make predictions, use a range of electrical equipment and draw simple conclusions from patterns they notice	Complete circuit Incomplete circuit	*Why will an incomplete circuit not light a bulb?*

4	**Recognise some common conductors and insulators, and associate metals with being good** **conductors.**	Children will be able to investigate which materials are electrical conductors or insulators.	- Distinguish between an object and the material it's made from - Investigate different materials to identify if they are electrical conductors or insulators. - Identify materials as conductors or insulators	**Comparative Testing** Set up a simple practical enquiry to test whether materials are conductors or insulators	Insulator Conductor	*Name 2 materials that are conductors*
5	**Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp light** **in a simple series circuit.**	Children will be able to explain how a switch works in a circuit, build switches and report their findings.	- Explain what a switch does in a circuit and identify and different switches - Use a switch in a circuit - Build their own switches and add them to a series circuit		Slide switch Toggle switch Selector switch Push button switch	*A switch turns on the electricity. True or false? Why?*
6	**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 bulb lights in a simple series circuit** **Recognise some common conductors and insulators, and associate metals with being good conductors.**	Children will be able to discuss and solve problems about electricity using reasoning skills.	- Work in mixed ability groups to apply their knowledge of electricity to reasoning situations	**Research/Pattern seeking** Use scientific evidence to answer questions and identify similarities, difference, patterns and changes.		

	Assessment					