Science – Year 4 Medium Term Plan
Autumn 1: Digestion and

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: The human digestive system	• To describe the function of the human digestive system. • Working scientifically: To evaluate a model.	I can list the main organs of the human digestive system. I can describe the function of the main organs of the digestive system. I can explain how a model has been used to show a part of the digestive system. Working scientifically: I can identify a weakness in the model used to represent the digestive system.	•Describe the simple functions of the basic parts of the digestive system in humans. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: •Using results to suggest improvements and raise further questions.	**absorb** **digest** **evaluate** **faeces** **large intestine** **nutrient** **oesophagus** **saliva** **small intestine** **stomach**	- Bread (one bitesize piece per pupil). - Equipment for modelling the digestive system: o cereal; o potato masher; o two large bowls (one labelled 'blood'); o one small jug of water labelled 'saliva'; o one small jug of fruit juice labelled 'acid'; o funnel (and tubing if available); o one resealable freezer bag; o tights (one pair); o a sponge; o a tray;
Two: Human teeth	•To recognise the different types of human teeth and their roles in eating. •Science in action: To describe real observation methods and evidence collected.	• I can recall the four types of human teeth. • I can explain what the different teeth are used for. • Science in action: I can identify how scientists find out about teeth.	•Identify the different types of teeth in humans and their simple functions. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: •Identifying differences, similarities or changes related to simple scientific ideas and processes.	**canine** **chew** **incisor** **jaw** **molar** **palaeontologist** **premolar** **tooth**	• Modelling dough (a handful per pupil s see Teacher knowledge). • A mini whiteboard (one between three). • A whiteboard pen (one between three). • Mirrors (one between three). • Sticky notes (one each). • Colouring pencils. • Link: BBC Bitesize - Types of teeth.x • Link: Operation Ouch - Why do we have differently shaped teeth?

Three: Investigating dental hygiene	• To explain how to care for our teeth. • Working scientifically: To plan an enquiry by considering which variables should be changed, measured and controlled. • Science in action: To determine why scientists need to work collaboratively and evaluate experiments.	• I can recall factors that damage teeth. • I can identify the best toothbrush to use when brushing your teeth. • Working scientifically: I can plan a fair test by selecting which variables need to be changed, measured and controlled in an experiment. • Science in action: I can describe some steps involved in real scientific testing.	• Setting up simple practical enquiries and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple tables. • Reporting on findings from enquiries. • Using results to suggest improvements and raise further questions.	**cavity** **decay** **dentist** **enamel** **fair test** **variable**	• Eggshells soaked in different liquids for class demonstration (see Teacher guidance). • Mini whiteboards (one each.) • Materials for toothbrush investigation (see Main event): o whiteboard marker (one per group); o toothbrushes (three per group s see Teacher guidance); o toothpaste; o paper towels (ten per group); o stopwatches (
Four: Teeth of carnivores, herbivores and omnivores	•To recognise that differences in teeth relate to an animal's diet. •Working scientifically: To classify animals based on their diet.	• I can describe what different types of teeth are used for. • I can recall different types of animal diets. • I can construct a food chain. • Working scientifically: I can use evidence when classifying animals.	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Gathering, recording and classifying data in a variety of ways to help in answering questions.	• **carnivore** • **classify** • **food chain** • **herbivore** • **omnivore**	- Magnifying glasses (optional s 12). - Link: BBC Teach - How do different animals use their teeth to eat? (up to 2:35)x - Link: Food Chain Song
Five: Producers, predators and prey in food chains	• To recognise producers, predators and prey in food chains. • Working scientifically: To analyse trends in line graphs and form conclusions using scientific knowledge.	- I can identify a producer, a predator and prey. - I can explain population changes using scientific ideas. - Working scientifically: I can begin to analyse predator-prey graphs. - Working scientifically: I can predict missing values from data. -	• Construct and interpret a variety of food chains, identifying producers, predators and prey. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording findings using charts. • Reporting on findings from enquiries, including oral and written explanations, presentations of results and conclusions. • Using results to draw simple conclusions and make predictions for new values.	- **hunt** - **population** - **predator** - **prey** - **producer** - **relationship** -	- Space large enough for pupils to run freely, such as the playground or hall. - Whistle. - Stopwatch. - Hoops (one for every three pupils in the class, minus one. For example, a class of 30 needs nine hoops). - Tennis balls or beanbags (one each). - Bibs. - Tag rugby bands.

					- Link: BBC Bitesize - Woodland Food Chain Challenge -
Six: Poo clues	• To recognise that animal poo can give us clues about digestion, teeth and diet. • Working scientifically: To construct a results table for recording observations.	- I can describe what a herbivore, carnivore and omnivore are. - I can look for clues in poo. - I can explain why poo is useful evidence. - Working scientifically: I can draw a results table and record observations. -	• 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. • Identify producers, predators and prey. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language and tables. • Reporting on findings from enquiries, including oral and written explanations or presentations of results and conclusions. • Using results to draw simple conclusions. • Using straightforward scientific evidence to answer questions or to support their findings.	**diet** **dung** **evidence** **record** **sample**	• Homemade poo samples (see Teacher guidance): o 300 g of flour; o 300 g of salt; o one tablespoon of vegetable oil; o beef stock cubes; o warm water; o brown paint; o seeds; o grass; o sticks; o hair; o crushed black pepper; o large mixing bowl; o plates or containers for samples. • Magnifying glasses (optional s. one per sample). • Link: BBC Earth - Steve Backshall's Poo Clue on VideoLink.x • Link: BBC Earth - Chimpanzees and Steve Backshall on VideoLink
Assessment: Assess topic using end of unit quiz and assessment sheet.					

Exploring electrical components and conductivity through circuit building and real life applications.

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: Using electricity	• To recognise how electrical appliances are powered. • Working scientifically: To record and classify qualitative data.	- I can identify if something is an electrical appliance or not. - I can classify an electrical appliance as mains or battery-powered. - Working scientifically: I can record results under the correct headings in a table. - Working scientifically: I can group electrical appliances based on their power supply.	• Identify common appliances that run on electricity. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language and tables.	**appliance** **battery** **electricity** **mains** **power source** **series circuit**	- Components to build a series circuit (teacher demonstration s see Main event): o 1 battery; o 2 wires; o 1 bulb. - Materials to model an electrical circuit (see Main event): o 1 cup for each child; o 1 cup for the teacher; o 1 empty bowl; o 1 bowl containing 30 wrapped sweets or counting cubes. - Link: How does electricity get into our homes? -
Two: Building circuits	• To construct an electrical circuit. • Working scientifically: To draw a scientific diagram.	• I can identify components in a circuit. • I can build a circuit using a battery and a bulb. • I can explain how to test if a circuit works or not. • Working scientifically: I can draw symbols for the electrical components. • Working scientifically: I can draw a circuit diagram.	- 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. Pupils should be taught to use the following practical scientific methods, processes and skills: - Recording findings using simple scientific diagrams. -	- **bulb** - **buzzer** - **cell/battery** - **circuit** - **component** - **motor** - **switch** - **wire**	- Whiteboards and pens (one each). - Scissors (see Wrapping up). - Objects for a guessing game (see Attention grabber): o an opaque bag or pillowcase; o 1 wire; o 1 battery; o 1 bulb; o 1 buzzer/motor. - Circuit kits (one between two): o 2 batteries; o 2 bulbs; o 3 wires.
Three:	• To explain the use of switches in a circuit.	•I can identify the symbol for a switch.	• Identify whether or not a lamp will light in a simple series circuit, based on whether or not	• **component** • **electrical tape**	- Whiteboards and pens (one each).

Switching on and off		I can predict whether a circuit will work by observing whether the switch is open or closed. I can explain how a switch works. I can explain why switches are useful.	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.	• **switch**	- Circuit components for teacher demonstration (see Main event): o 1 battery; o 1 bulb; o 1 switch; o 3 wires. - Buzz wire kits (one between two): o 1 battery; o 1 buzzer (could use a bulb if buzzer not available); o 3 wires with clips; o 1 metal paper clip with no coating; o a small ball of modelling clay or sticky tack; o 15 cm bare electrical wire that is bendable by hand; o a short length of electrical tape.
Four: Investigating electrical conductors and insulators	• To explain the use of materials as electrical conductors or insulators. • Working scientifically: To write a method.	• I can describe how to test whether a material is a good electrical conductor or insulator. • I can recall which groups of materials are good electrical conductors or insulators. • Working scientifically: I can write a safe method in chronological order, using clear instructions and appropriate equipment. •	• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Recognise some common conductors and insulators, and associate metals with being good conductors. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • 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.	**electrical conductor** **electrical insulator** **material** **method** **property**	- Whiteboards and pens (one each). - Making jam on toast equipment (teacher demonstration s. see Main event): o a toaster; o 2 slices of bread; o a knife; o butter; o jam. - Testing electrical conductivity kit (one set between two): o 1 battery; o 1 bulb; o 3 wires (two with clips or metal ends). - Range of materials to test, such as a plastic spoon, a metal spoon, a graphite pencil sharpened at both ends, a strip of paper, a

			• 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. -		short piece of string or wool, a piece of tin foil, a wooden lolly stick and a metal nail. - Link: PHET Circuit Construction Kit (optional s see Teacher knowledge).x - Link: BBC Teach - Conductors and insulators from 10:30 -
Five: Investigating bulb brightness	• To investigate what affects bulb brightness. • Working scientifically: To pose questions and plan ways to test them.	• I can describe how the number of bulbs in a series circuit affects bulb brightness. • I can explain why bulb brightness is affected by the number of bulbs. • Working scientifically: I can pose a question about bulbs in an electrical circuit. • Working scientifically: I can suggest ways of answering a question. • Working scientifically: I can explain why a question is testable.	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Setting up simple practical enquiries, comparative and fair tests. • 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. -	**ammeter**	- Investigating bulb brightness kits (one per pair): o one battery; o three bulbs; o four wires; o ammeter (optional s see Adaptive teaching). - One ammeter (for teacher demonstration s see Wrapping up). - Materials to model an electrical circuit (optional s see Wrapping up). o a cup for each child; o one cup for the teacher; o three empty bowls (each representing a bulb); o one bowl containing 30 wrapped sweets or counting cubes. - Device with internet access (optional s see Adaptive teaching).
Six: Electrical safety	• To explain how to be safe around electricity. • Science in action: To explore how scientific advances inform safety advice.	• I can describe precautions for working safely with electricity. • I can use scientific knowledge to explain why safety rules are in place. • Science in action: I can recall that inventing new materials or appliances may change safety advice.	• Identify common appliances that run on electricity. • Identifying and naming basic parts of a circuit, including cells, wires, bulbs, switches and buzzers. • Recognise some common conductors and insulators, and associate metals with being good conductors.	• **hazard** • **precaution** • **safety**	- Whiteboard and pens (one between two). - Sticky notes (optional s one between two s see Attention grabber).

Assessment: Assess topic using end of unit quiz and assessment sheet.					

Science – Year 4 – Medium Term Plan
Spring 1: Materials: States of matter
Exploring states of matter and changes of state.

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources

One: Solids	• To identify solids using their properties. **Working scientifically** • To ask relevant questions about the properties of solids.	• I can list the properties of solids. • I can identify examples of solids. **Working scientifically** • I can ask questions about the properties of solids. • I can identify which questions are relevant. • I can identify which properties to test.	• Compare and group materials together, according to whether they are solids, liquids or gases. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Asking relevant questions and using different types of scientific enquiries to answer them.	• **compress** • **force** • **gas** • **liquid** • **matter** • **solid** • **state** • **volume**	• Sticky notes (one between three). • A spacious area, e.g. playground or sports hall (optional ↓ see Attention grabber). • Equipment for sorting activity (per group of three ↓ see Attention grabber): ○ 3 PE hoops; ○ 3 whiteboards and pens; ○ 1 tablet; ○ A selection of materials (see Teacher knowledge). • Equipment for testing the properties of solids (per group of three ↓ see Main event): ○ 1 plastic tray; ○ 1 plastic cup; ○ 1 jar or container with a different shape than the plastic cup; ○ A selection of solid samples (see Teacher knowledge).
Two: Liquids and gases	• To identify liquids and gases using their properties. **Working scientifically** • To use results to draw simple conclusions about the properties of liquids.	• I can list the properties of liquids and gases. • I can identify examples of liquids and gases. **Working scientifically** • I can make careful observations. • I can use these observations to draw simple conclusions. -	- Compare and group materials together, according to whether they are solids, liquids or gases. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: - Use results to draw simple conclusions.	**gas** **liquid**	- 1 large syringe (end sealed) or empty plastic bottle with lid. - Equipment for testing the properties of liquids (per group of three ↓ see Main event): ○ 1 plastic tray; ○ 1 jar or container with a different shape than the plastic cup; ○ 1 sealed syringe containing a coloured liquid (see Teacher knowledge); ○ A selection of liquid samples in plastic cups (see Teacher knowledge).

					- A spacious area, e.g. playground or sports hall (optional ↓ see Wrapping up). - Equipment for sorting activity (per group of three ↓ see Wrapping up): o 3 PE hoops; o 3 whiteboards and pens; o 1 tablet (with photo taken by the group in Lesson 1: Solids); o A selection of materials (see Teacher knowledge). - Activity: Testing the properties of solids, liquids and gases (from Lesson 1: Solids). - Link: The Guardian - Water in space -
Three: Melting and freezing	• To describe melting and freezing. **Working scientifically** • To use thermometers to take accurate measurements before and after melting.	• I can describe the conditions needed for melting and freezing. • I can describe the property changes as a material melts or freezes. • I can name the start and end states when melting and freezing materials. **Working scientifically** • I can use a thermometer accurately. • I can read a thermometer accurately.	• 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 (mC). **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers.	**freezing** **freezing point** **melting** **melting point** **temperature** **thermometer**	• Silicone animal shapes ice cube mould (optional ↓ a normal ice cube tray can be used). • Equipment for the 'pet' activity (per group of three ↓ see Attention grabber): o 1 animal shaped ice cube (or normal ice cube); o 1 foil cake case. • Equipment for investigating the effect of temperature on melting (per group of three ↓ see Main event): o water of varying temperature (see Teacher knowledge); o 5 reusable ice cubes (or normal ice cubes); o 5 plastic cups;

					○ 1 pair of tongs or a spoon; ○ 1 thermometer. • An online stopwatch.
Four: Condensing and evaporating	• To describe condensing and evaporating. **Working scientifically** • To make predictions for new values about evaporation rates. •	• I can describe the conditions needed for evaporating and condensing. • I can describe the property changes as a material evaporates or condenses. • I can name the start and end states when evaporating and condensing materials. **Working scientifically** • I can predict how temperature will affect evaporation rates. • I can predict how wind will affect evaporation rates.	• 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 (mC). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Use results to make predictions for new values.	**boiling point** **condensation** **condensing** **condensing point** **evaporating** **evaporation rate** **gaseous** **rate** **steam** **water vapour**	• 'Pet' ice cubes from Lesson 3: Melting and freezing. • A kettle. • Cold mirrors (one between two s see Teacher knowledge). • Equipment for investigating evaporation rates (per group of three s see Main event): ○ 3 plastic cups of water of varying temperature (see Teacher knowledge); ○ 1 stopwatch. • A large, plastic box
Five: The water cycle	• To describe the different stages of the water cycle. **Working scientifically** • To record the stages of the water cycle using a labelled diagram.	• I can name the stages of the water cycle. • I can order the stages of the water cycle. • I can describe the changes of state that occur during the water cycle. **Working scientifically** • I can draw a diagram using key information. • I can label a diagram with keywords.	• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording findings using simple scientific language and labelled diagrams.	**precipitation** **the water cycle**	• Whiteboard and pen (one each). Equipment for making it rain practical (per group of three s see Main event): ○ 1 large glass jar with a metal lid; ○ access to warm water (see Teacher knowledge); ○ access to blue food colouring (see see Teacher knowledge); ○ 3 reusable ice cubes. Tablets or devices with internet access (one each). Link: BBC Teach - The water cycle.x Link: Sketchpad
Six: Climate change and the	• To describe how temperature affects evaporation rates and the water cycle. **Working scientifically**	• I can describe the effect of climate change on temperature.	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Working scientifically**	**climate change** **drought** **flood**	• Whiteboard and pen (one each). • Tablets (optional s see Adaptive teaching).

water cycle	• To research climate change and the water cycle.	• I can link temperature change to evaporation rates. • I can describe how climate change affects the water cycle. **Working scientifically** • I can identify key information from a source. • I can use more than one source to research. -	Pupils should be taught to use the following practical scientific methods, processes and skills: Gathering and presenting data in a variety of ways to help in answering questions.		• Sticky notes (one each). • Link: *Assessment s Science Y4: States of matter.* • Link: BBC Teach - The water cycle.x • Link: UCAR - The water cycle and climate change
Assessment: Assess topic using end of unit quiz and assessment sheet.					

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: Vibrations	• To describe how sounds are made. **Working scientifically:** • To observe closely how different instruments create a sound.	• I can define the term 'vibration'. • I can identify the part of an instrument making a sound. • I can identify how different instruments make a sound. **Working scientifically:** • I can see, hear and feel different sounds. • I can record my observations in a data table.	• Identify how sounds are made, associating some of them with something vibrating. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	• **musical instrument** • **sound** • **vibration**	- Whiteboard and pen (one between three). - 7 tables set up with objects used to visualise sound (see Teacher knowledge): o tuning forks (approximately five); o metal spoons (approximately five); o a plastic tray with a drum and rice; o inflexible plastic rulers (approximately five); o rubber bands (approximately five); o a mixing bowl half filled with water; o tablets with an oscilloscope app downloaded (approximately five). - 10 musical instruments with different vibrating parts -
Two: Sound waves	• To describe how sounds are heard through different mediums. **Working scientifically:** • To research how whales and dolphins communicate underwater.	• I can describe how a sound wave travels through the air to the ear. • I can compare how sound travels through different mediums. • I can explain why sound travels faster and further in water than air. **Working scientifically:** • I can use an article to research how whales and dolphins communicate. • I can identify the important information. • I can answer questions using my research.	• Recognise that vibrations from sounds travel through a medium to the ear. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	**air** **ear** **eardrum** **gas** **liquid** **matter** **medium** **solid**	- Whiteboard and pen (one between three). - Equipment for the sending secret messages activity (between three s see Main event): o 1 pre-made cup and string telephone (see Teacher knowledge); o 2 whiteboards and pens; o 5 pieces of string of different lengths (optional s see Adaptive teaching). - A large space, such as a hall or playground (optional s see Main event). - Equipment for the clangers activity (between three s see Wrapping up): o 1 pre-made clanger using a metal coat hanger and two pieces of 30 cm string (see Teacher knowledge); o 1 pen or pencil. -

Three: Volume	• To describe the relationship between vibration strength and volume. **Working scientifically:** • To present results using a bar chart.	• I can define the term 'volume'. • I can identify the unit of volume. • I can describe how to change the volume of different musical instruments. **Working scientifically:** • I can draw bars on a bar chart. • I can read the bars on a bar chart. • I can use data to answer questions.	• Find patterns between the volume of a sound and the strength of the vibrations that produced it. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**decibels (dB)** **decibel meter** **loud** **quiet** **volume**	• A skipping rope (see Main event). • Equipment for investigating volume (see Main event s between three): ○ A device with internet access or a data logger (one between three s see Main event); ○ 10 musical instruments with different vibrating parts (see Teacher knowledge). • Rulers (one each). • Colouring pencils (optional s a selection per table). • Whiteboards and pens (one between two). • *Activity: Musical instruments data table* (from *Lesson 1: Vibrations*). • *Resource: Knowledge organiser: Science s Sound and vibration* from *Lesson 1: Vibrations* (optional s see Adaptive teaching). • Link: Bouncy Balls - Volume detector.cc • Link: Web browser tools - Decibel meter.
Four: Volume and distance	• To describe the relationship between volume and distance. **Working scientifically:** • To suggest which variables to measure and for how long.	• I can describe what happens to the volume of a sound as the distance from the source increases and decreases. • I can estimate the comparative loudness of a sound based on its volume and distance. **Working scientifically:** • I can identify which variables should be measured.	- Recognise that sounds get fainter as the distance from the sound source increases. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: - Setting up simple practical enquiries, comparative and fair tests.	**anomaly** **distance** **decibels (dB)** **variable** **volume**	- Equipment for the investigation (see Main event s between three): ○ 2 tablets (or one tablet and a data logger); ○ 1 tape measure (15 m). - An outside space. - The children's bar charts from *Lesson 3: Volume* (see Attention grabber). - Link: Web browser tools - Decibel meter -

		• I can identify how to measure these variables. • I can identify how long to measure these variables for. -			
Five: Pitch	• To describe pitch and how to change it. **Working scientifically:** • To design simple results tables.	• I can define the term 'pitch'. • I can identify the unit of pitch. • I can describe how to change the pitch of different musical instruments. **Working scientifically:** • I can draw a table with two columns. • I can put the headings in the correct place. • I can fill data into a table.	• Find patterns between the pitch of a sound and features of the object that produced it. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	• **hertz (Hz)** • **high pitch** • **low pitch** • **pitch** • **table**	• Whiteboard and pen (one each). • A skipping rope (see Main event). • Equipment for the changing pitch activity (see Main event ≤ between three): ○ 1 device with internet access or a data logger; ○ 10 musical instruments with different vibrating parts (see Teacher knowledge). • Equipment for making musical instruments (see Main event ≤ one of the three options between three): ○ 5 metal pan, jar or bottle lids of different sizes; ○ 5 elastic bands of different thicknesses and a container; ○ 5 glass bottles and access to water. • Activity: Musical instruments data table (from Lesson 1: Vibrations). • Resource: Knowledge organiser: Science ≤ Sound and vibration from Lesson 1: Vibrations (optional ≤ see Adaptive teaching). • Link: The online metronome - Pitch detector
Six: Sound insulation	• To explain how insulating materials can be used to muffle sound. **Working scientifically:**	• I can explain why some jobs require ear protection. • I can describe how insulating materials can be used to protect the ears.	Recognise that vibrations from sounds travel through a medium to the ear. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills:	**ear protectors** **insulator of sound** **soundproofing**	• Whiteboard and pen (one per group of five). • Equipment for investigating sound insulation (see Main event ≤ between three). ○ 2 tablets;

	• To identify when results or observations do not match predictions.	• I can list some examples of materials that are good insulators of sound. **Working scientifically:** • I can identify a result that does not match a prediction. • I can suggest reasons it does not match. -	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.		○ 1 plastic tray (optional); ○ 1 whiteboard and pen; ○ 5 test materials (see Teacher knowledge). • Resource: Knowledge organiser: Science 5 Sound and vibration from Lesson 1: Vibrations (printed on A3 5 one between five). • Link: Assessment 5 Science Y5: Sound and vibrations. • Link: Web browser tools - Decibel meter
Assessment: Assess topic using end of unit quiz and assessment sheet.					

Science– Year 4- Medium Term Plan
Summer 1: Animals: Classification and changing habitats
Grouping and classifying living things and exploring habitat changes

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One: Grouping living things: Vertebrates	• To group animals in various ways. **Working scientifically**	• I can sort animals into groups based on shared characteristics. • I can identify broad groups of animals	- Recognise that living things can be grouped in a variety of ways. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills:	**Carroll diagram** **classify** **invertebrate** **taxonomist** **vertebrate** **Venn diagram**	• Whiteboards and pens (one each). • Plain A4 paper (eight sheets per group of three). • PE hoops (two per group of three 5 see Main event).

and invertebrates	• To record data in different ways.	(vertebrates and invertebrates). **Working scientifically** • I can record data in a Carroll diagram. • I can record data in a Venn diagram.	- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.		• Tablets or devices with internet access and camera capabilities (one per group of three). • Access to a hall or outside space (optional ↓ see Main event).
Two: Grouping living things: Plants	• To group plants in various ways. **Working scientifically** • To apply and create classification keys.	• I can sort plants into groups based on shared characteristics. • I can identify broad groups of plants (flowering and non-flowering). **Working scientifically** • I can choose appropriate questions for a classification key. • I can use a classification key.	• 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. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • 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.	**classification key** **flowering plants** **non-flowering plants**	• Whiteboards and pens (one each). • Green and blue coloured pencils (optional ↓ see Main event). • Access to outside space with trees (see Teacher knowledge). • Equipment for the classification key activity (one set per group of three ↓ see Main event): ○ 10 sticky notes; ○ 14 half straws; ○ A1 paper (one sheet). • Tablets or devices with internet access and camera capabilities (one per group of three).
Three: Classification Keys	• To make careful observations. • To make and use classification keys.	- I can observe and describe the characteristics of different organisms. - I can use a classification key to group, identify and name local living things. - I can draw a classification key.	- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: - Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**classification key**	• Flipchart (optional ↓ see Recap and recall). • An outdoor space with hidden bird pictures (see Attention grabber). • An outdoor space where the children can use chalk on the floor (see Main event). • A pair of binoculars (optional ↓ see Attention grabber). • Sticky tack (for the bird hunt pictures ↓ see Main event). • A device with internet access (one between two ↓ see Main event). • Equipment for classification key activity (one per group): ○ chalk; ○ 1 set of *Resource: Invertebrate cards* and *Resource: Vertebrate cards* from *Lesson 1: Vertebrates and invertebrates*.

					• Link: RSPB - Bird A-Z s.
Four: Habitats and seasonal change	• To recognise and describe different habitats and their inhabitants. **Working scientifically** • To gather, record, classify and present data.	• I can recognise that different living things live in different types of habitats. • I can describe how habitats change over time. **Working scientifically** • I can record observations of how a habitat changes over the seasons. • I can effectively present my observations of how a woodland habitat changes over the seasons. -	- Recognise that environments can change and that this can sometimes pose dangers to living things. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	**easonal changes** **bserve**	- Resource: Vertebrate cards (one set between three s. see Lesson 1: Grouping living things: Vertebrates and invertebrates]. - Sticky notes (one each). - Tablet or device with internet access (one each). - Colouring pencils -
Five: Human habitats	• To recognise the impact humans can have on habitats. **Working scientifically** • To research using an information sheet.	• I can describe how human activities can change the environment. • I can identify the positive and negative impacts humans can have on the environment. **Working scientifically** • I can identify the key information from my research. • I can use my research to answer questions.	• Recognise that environments can change and that this can sometimes pose dangers to living things. **Working scientifically** Pupils should be taught to use the following practical scientific methods, processes and skills: • Asking relevant questions and using different types of scientific enquiries to answer them. • Using straightforward scientific evidence to answer questions or to support their findings.	**conservation** **conservationist** **deforestation** **endangered** **human impact** **nature reserve** **pollution**	- Whiteboard and pen (one each). - Devices with internet access (three per group of six). - Scissors (one each). - Stapler
Six: Natural changes to habitats	To recognise the impact of natural disasters on habitats.	I can describe how wildfires, earthquake and floods affect habitats. I can identify some of the impacts of natural disasters on wildlife.	Recognise that environments can change and that this can sometimes pose dangers to living things.	**earthquake** **flood** **uprooted** **waterlogged** **wildfire**	• Sticky notes (at least one each). • Flipchart (see Recap and recall). • Access to a large space (optional s. see Main event). • The Resource: Knowledge organiser: Science: Classification and changing habitats from Lesson 1: Grouping living things: Vertebrates and invertebrates (optional, see Adaptive teaching). • Link: CBBC Newsround: Wildfires

Assessment: Assess topic using end of unit quiz and assessment sheet.					

Science – Year 4 – Medium Term Plan
Summer 2: Making connections: How does the flow of liquids compare (31st May 2024)

Lesson	Learning Objective	Success Criteria	National Curriculum Links	Vocabulary	Resources
One:		-		-	-
Two:		-		-	-
Three:		-			
Four:		-		-	-

Five:		-		-	-
Six:		-			
Assessment: Assess topic using end of unit quiz and assessment sheet.					