Unit	Lesson name	Lesson No.	Learning objective	Expected Standard (EXS)	Greater depth (GDS)
Digestion and food	The human digestive system	1	**Knowledge**: To describe the function of the human digestive system. **Working scientifically:** To evaluate a model.	Labelling key organs found in the digestive system and describing each of their functions. Explaining how the model represented each key function of the digestive system. Evaluating a strength or weakness of the model. **You must cover: mouth, oesophagus, stomach, liver, large intestine, small intestine and anus.**	Evaluating the effectiveness of the model digestive system by considering strengths and weaknesses and suggesting improvements.
	Human teeth	2	**Knowledge**: To recognise the different types of human teeth and their roles in eating. **Science in action:** To describe real observation methods and evidence collected.	Identifying and describing the functions of the four different types of adult, human teeth. Describing how X-rays can be used as evidence to study teeth. Making predictions about which teeth are missing in different diagrams. **You must cover: incisor, molar, pre-molar and canines.**	Explaining how humans would be affected by having missing teeth or only one type of tooth, using key vocabulary to justify opinions.
	Investigating dental hygiene	3	**Knowledge**: 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.	Knowing that good dental care involves brushing their teeth twice a day with toothpaste and a soft toothbrush. Identifying some of the variables that need to be kept the same, predicting an outcome and identifying limitations to the experiment. Knowing that scientific research needs repeated results before use in society.	Explaining how control variables can be kept the same. Explaining their prediction using scientific knowledge and suggesting improvements to the identified limitations. Explaining why one set of results is not enough in scientific research before use in society.
	Teeth of carnivores, herbivores and omnivores	4	**Knowledge**: To recognise that differences in teeth relate to an animal's diet. **Working scientifically:** To classify animals based on their diet.	Naming different teeth and describing what kind of diet they are used for. Producing a food chain that begins with a plant and has arrows that move up the food chain.	Comparing teeth between animals. Explaining why animals have different teeth, and justifying opinions using scientific ideas and vocabulary.
	Producers, predators and prey in food chains	5	**Knowledge**: To recognise producers, predators and prey in food chains. **Working scientifically:** To analyse trends in line graphs and form conclusions using scientific knowledge.	Defining a producer, predator and prey and identifying examples in food chains. Identifying trends in a predator-prey graph.	Predicting missing values from a graph, explaining their choice using scientific vocabulary. Explaining how factors other than feeding relationships may affect population sizes.
	Poo clues	6	**Knowledge**: To recognise that animal poo can give us clues about digestion, teeth and diet. **Working scientifically:** To construct a results table for recording observations.	Drawing a results table that has space for observations about different poo samples. Describing digestion, teeth and diets when talking about the observed poo clues. Writing a letter that uses a range of scientific vocabulary from the unit.	Drawing a results table that also has space for a conclusion about the animal's diet. Linking digestion, teeth and diets in descriptions. Writing a letter that uses a broad range of scientific vocabulary from the unit.
Electricity and circuits	Using electricity	1	**Knowledge**: To recognise how electrical appliances are powered. **Working scientifically:** To record and classify qualitative data.	Recalling a range of electrical appliances and classifying them as mains or battery-powered. Drawing a results table and recording a range of appliances under the correct headings 'Mains' or 'Batteries'. Explaining why something is either mains or battery-powered.	Deciding which arguments for and against mains or battery power are the strongest and justifying opinions. Evaluating the model electrical circuit by considering its limitations. Selecting an electrical appliance and explaining why it is either mains or battery-powered.
	Building circuits	2	**Knowledge**: To construct an electrical circuit. **Working scientifically:** To draw a scientific diagram.	Identifying and drawing simplified electric circuit symbols. Drawing a simplified circuit diagram. Explaining how to test if a circuit works. Identifying when simple electrical circuits will work. **You must cover: cell symbol/bulb symbol/switch symbol/wire symbol.**	Explaining why scientists use circuit symbols. Explaining why a circuit will work or not.

	Switching on and off	3	**Knowledge**: To explain the use of switches in a circuit.	Identifying the symbols for open and closed switches. Predicting whether a circuit will work based on whether the switch is open or closed. Explaining that a switch works by breaking and completing a circuit. Giving examples of how switches are useful.	Using symbols to create a simple circuit diagram for a complex circuit. Explaining how components work using more complex language, such as the effect of a switch on the flow of charge.
	Investigating electrical conductors and insulators	4	**Knowledge**: To explain the use of materials as electrical conductors or insulators. **Working scientifically:** To write a method.	Describing that a material is a good electrical conductor when it is added to an electrical circuit and the bulb lights and that a material is a good electrical insulator when it is added to an electrical circuit and the bulb does not light. Recalling that metals are good electrical conductors and plastics are good electrical insulators. Writing a method for the investigation that considers appropriate equipment, ordering clearly written steps and considering safety.	Predicting the conductivity of other objects or materials. Explaining predictions using their results.
	Investigating bulb brightness	5	**Knowledge**: To investigate what affects bulb brightness. **Working scientifically:** To pose questions and plan ways to test them.	Describing that the more bulbs added to a series circuit, the dimmer the bulbs will be. Explaining that the bulbs will be dimmer when more are added to a circuit, as less energy is transferred to each of them. Posing questions relating to bulbs in an electrical circuit. Explaining why a selected question is testable.	Extrapolating relationships by predicting that using more than three bulbs will make them even dimmer.
	Electrical safety	6	**Knowledge**: To explain how to be safe around electricity. **Science in action:** To explore how scientific advances inform safety advice.	Describing precautions for working safely with electricity. Explaining some precautions using knowledge of circuit diagrams, electrical components, conductors or insulators. Suggesting that new inventions will change safety advice.	Explaining a range of safety precautions using a broad range of scientific vocabulary. Justifying why one piece of safety advice may be more important than others.
States of matter	Solids	1	**Knowledge:** To identify solids using their properties. **Working scientifically:** To ask relevant questions about the properties of solids.	Listing the properties of solids; identifying examples of solids; asking questions about the properties of solids; identifying which questions are relevant; identifying which properties to test; testing the properties of solids. **You must cover: Solids have a fixed shape and cannot flow.**	Using a Venn diagram to identify mixtures containing multiple states of matter; testing solids that appear to be compressible due to trapped air.
	Liquids and gases	2	**Knowledge:** To identify liquids and gases using their properties. **Working scientifically:** To use results to draw simple conclusions about the properties of liquids.	Listing the properties of liquids and gases; identifying examples of liquids and gases; testing the properties of liquids and gases; making careful observations and using these observations to draw simple conclusions. **You must cover: liquids flow and take the shape of their containers. Gases flow and take the shape of their container. They can also be compressed.**	Testing liquids that provide less obvious results; discussing circumstances that may prevent a state from acting as expected.
	Melting and freezing	3	**Knowledge:** To describe melting and freezing. **Working scientifically:** To use thermometers to take accurate measurements before and after melting.	Describing the conditions needed for melting and freezing; describing the property changes as a material melts or freezes; naming the start and end states when melting and freezing materials; using a thermometer accurately; reading a thermometer accurately.	Planning a test to compare the melting points of different materials.
	Condensing and evaporating	4	**Knowledge:** To describe condensing and evaporating. **Working scientifically:** To make predictions for new values about evaporation rates.	Describing the conditions needed for melting and freezing; describing the property changes as a material melts or freezes; naming the start and end states when melting and freezing materials; predicting how temperature and wind will affect evaporation rates.	Explaining how sweating cools the body through the process of evaporation.
	The water cycle	5	**Knowledge:** To describe the different stages of the water cycle. **Working scientifically:** To record the stages of the water cycle using a labelled diagram.	Naming, ordering and describing the stages of the water cycle; drawing and labelling a diagram using key information.	Annotating a diagram; comparing a model water cycle with the real water cycle to identify similarities and differences; applying knowledge of evaporation rates to determine how climate change might affect the water cycle.

	Climate change and the water cycle	6	**Knowledge:** To describe how temperature affects the evaporation rates and the water cycle. **Working scientifically:** To research climate change and the water cycle.	Describing the effect of climate change on temperature; linking temperature change to evaporation rates; describing how climate change affects the water cycle; identifying key information from a source; using more than one source to research.	Using web resources to find out additional details about how climate change affects the water cycle; providing more examples of how climate change affects the water cycle.
Sound and vibrations	Vibrations	1	**Knowledge:** To describe how sounds are made. **Working scientifically:** To observe closely how different instruments create a sound.	Defining the term 'vibration', identifying the part of an instrument making a sound and how different instruments make a sound; sensing different sounds using sight, touch and hearing; recording observations in a data table.	Describing using keywords how an instrument makes a sound and how the sound reaches your ears.
	Sound waves	2	**Knowledge:** To describe how sounds are heard through different mediums. **Working scientifically:** To research how whales and dolphins communicate underwater.	Describing how a sound waves travels through the air to the ear; comparing how sound travels through different mediums; explaining why sound travels faster and farther in water than air; using an article to research how whales and dolphins communicate; identifying the important information and using it to answer questions.	Explaining why sound travels fastest in solids and slowest in gases; describing how volume changes with distance; describing how whales and dolphins use echolocation to navigate.
	Volume	3	**Knowledge:** To describe the relationship between vibration strength and volume. **Working scientifically:** To present results using a bar chart.	Defining the term 'volume'; identifying the unit of volume; describing how to change the volume of different musical instruments; drawing bars on a bar chart; reading the bars on a bar chart; using data to answer questions.	Measuring the volume of everyday sounds and determining if they are safe; identifying how long a sound can be safely listened to; creating an infographic to display information.
	Volume and distance	4	**Knowledge:** To describe the relationship between volume and distance. **Working scientifically:** To suggest which variables to measure and for how long.	Describing what happens to the volume of a sound as the distance from the source increases and decreases; estimating the comparative loudness of a sound based on it's volume and distance; identifying which variables should be measured, how long to measure them for and what measuring equipment to use.	Calculating the decibel change with distance, applying a pattern to predict which sound will be louder.
	Pitch	5	**Knowledge:** To describe pitch and how to change it. **Working scientifically:** To design simple results tables.	Defining the term 'pitch'; identifying the unit of pitch; describing how to change the pitch of different musical instruments; drawing a table with two columns; putting the headings in the correct place; filling data in a table.	Drawing data tables with three columns, comparing pitch and volume; drawing sound waves to represent different pitch and volume sounds.
	Sound insulation	6	**Knowledge:** To explain how insulating materials can be used to muffle sound. **Working scientifically:** To identify when results or observations do not match predictions.	Explaining why some jobs require ear protection; describing how insulating materials can be used to protect the ears; listing some examples of materials that are good insulators of sound; identifying a result that does not match a prediction; suggesting reasons it does not match.	Designing ear protectors with consideration for the properties of the materials used; designing and drawing a results table.
Classification and changing habitats	Grouping living things: Vertebrates and invertebrates	1	**Knowledge:** To group animals in various ways. **Working scientifically:** To record data in different ways.	Sorting living things into groups based on shared characteristics; identifying broad groups of animals (vertebrates and invertebrates); recording data in a Carroll diagram; recording data in a Venn diagram. **You must cover: vertebrates, invertebrates, fish, amphibians, reptiles, insects, birds and mammals**	Creating Carroll and Venn diagrams; debating how humans should be sorted and classified.
	Grouping living things: Plants	2	**Knowledge:** To group plants in various ways. **Working scientifically:** To apply and create classification keys.	Sorting plants into groups based on shared characteristics; identifying broad groups of plants (flowering and non-flowering); choosing appropriate questions for a classification key; using a classification key.	Writing appropriate questions for a classification key; deducing missing questions from a completed classification key.
	Classification keys	3	**Knowledge: To make and use classification keys.** **Working scientifically:** To make careful observations.	Observing and describing the characteristics of different organisms from labelled pictures; using a classification key to group, identify and name local living things; drawing a classification key.	Creating more complex classification keys for larger groups of living things; observing the key characteristics of local birds from an unlabelled photograph and using these to classify them using a classification tool.

	Habitats and seasonal change	4	**Knowledge:** To recognise and describe different habitats and their inhabitants. **Working scientifically:** To gather, record, classify and present data.	Recognising that different living things live in different types of habitats; describing and presenting how habitats change over the seasons; recording observations of how a habitat changes over the seasons. **You must cover: rainforest, desert, savannah, woodland, ocean and tundra.**	Researching additional detail on their season; deducing how a lack of seasons might impact the animals and plants that live in a woodland.
	Human impacts on habitats	5	**Knowledge:** To recognise the impact humans can have on habitats. **Working scientifically:** To research using an information sheet.	Describing how human activities can change environments; identifying the positive and negative impacts humans can have on environments; identifying the key information from their research; using it to answer questions.	Researching in more detail; using multiple resources to research.
	Natural changes to habitats	6	**Knowledge:** To recognise the impact of natural disasters on habitats.	Describing how wildfires, earthquakes and floods affect habitats; identifying some of the impacts of natural disasters on wildlife.	Describing how climate change might increase the incidences of flooding.
How does the flow of liquids compare?	Investigating liquids - Planning	1	**Knowledge**: To revise the units States of matter and Classification and changing habitats. **Working scientifically:** To plan a comparative test.	Sorting materials into solids, liquids and gases; describing the properties of a liquid, including how runny it is; identifying the characteristics of insects; write a prediction; sorting variables.	Designing a data table with more than two columns; defining the term viscosity; using the term viscosity to write a prediction.
	Investigating liquids - Gathering data	2	**Knowledge**: To revise the unit Electricity and circuits. **Working scientifically:** To gather and record data.	Explaining how a switch works; identifying how to make a circuit more powerful; gathering data; recording data; measuring accurately in minutes.	Recording data to two decimal places and rounding to the nearest whole number.
	Investigating liquids - Analysing, concluding and evaluating	3	**Knowledge**: To revise the units States of matter and Sound and vibrations. **Working scientifically:** To conclude and evaluate the investigation.	Describing how sound travels in solids, liquids and gases; comparing the properties of solids and liquids; writing a conclusion that refers to data; evaluating the trustworthiness of a method; suggesting further questions.	Identifying anomalous data; suggesting causes for anomalous data; identifying variables that are difficult to control.
	Investigating liquids - Extending	4	**Knowledge**: To revise the unit Digestion and food. **Working scientifically:** To observe carefully and apply these observations to problem solve.	Naming the organs of the digestive system; describing the pathway through the digestive system; observing the speed of absorption of different viscosity liquids; selecting the best viscosity medicine for different purposes.	Grouping liquids according to viscosity; designing a test to provide quantitative data.
	Investigating liquids - Presenting	5	**Knowledge**: To revise the unit States of matter. **Working scientifically:** To report on my findings.	Describing the stages of the water cycle; creating a poster to report on their findings; assessing the effectiveness of a presentation.	Summarising details of the variables and enquiry type.