



National Curriculum Progression

Y1	Y2	Y3	Y4	Y5	Y6
<p>Seasonal Change</p> <ul style="list-style-type: none"> i. observe changes across the four seasons ii. observe and describe weather associated with the seasons and how day length varies. 		<p>Light</p> <ul style="list-style-type: none"> i. recognise that they need light in order to see things and that dark is the absence of light ii. notice that light is reflected from surfaces iii. recognise that light from the sun can be dangerous and that there are ways to protect their eyes iv. recognise that shadows are formed when the light from a light source is blocked by an opaque object v. find patterns in the way that the size of shadows change. <p>Forces and Magnets</p> <ul style="list-style-type: none"> i. compare how things move on different surfaces ii. notice that some forces need contact between two objects, but magnetic forces can act at a distance iii. observe how magnets attract or repel each other and attract some materials and not others ♣ compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials iv. describe magnets as having two poles v. predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<p>Sound</p> <ul style="list-style-type: none"> i. identify how sounds are made, associating some of them with something vibrating ii. recognise that vibrations from sounds travel through a medium to the ear iii. find patterns between the pitch of a sound and features of the object that produced it iv. find patterns between the volume of a sound and the strength of the vibrations that produced it v. recognise that sounds get fainter as the distance from the sound source increases. <p>Electricity</p> <ul style="list-style-type: none"> i. identify common appliances that run on electricity ii. construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers iii. 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 iv. recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit v. recognise some common conductors and insulators, and associate metals with being good conductors. 	<p>Earth and Space</p> <ul style="list-style-type: none"> i. describe the movement of the Earth, and other planets, relative to the Sun in the solar system ii. describe the movement of the Moon relative to the Earth iii. describe the Sun, Earth and Moon as approximately spherical bodies iv. use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. <p>Forces</p> <ul style="list-style-type: none"> i. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object ii. identify the effects of air resistance, water resistance and friction, that act between moving surfaces iii. recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 	<p>Light</p> <ul style="list-style-type: none"> i. recognise that light appears to travel in straight lines ii. use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye iii. explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes iv. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. <p>Electricity</p> <ul style="list-style-type: none"> i. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit ii. compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches iii. use recognised symbols when representing a simple circuit in a diagram.

Scientific Enquiry Skills

Asking Questions	Investigating	Gathering and Recording Data	Presenting and Analysing Findings
<ul style="list-style-type: none"> ♣ asking relevant questions and using different types of scientific enquiries to answer them 	<ul style="list-style-type: none"> ♣ 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 	<ul style="list-style-type: none"> ♣ 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 	<ul style="list-style-type: none"> ♣ 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.

Key Vocabulary – Unit Specific		Key Vocabulary – Scientific Enquiry	
<p>instruments – air, vibrates – describe, movement</p> <p>vibrations – travel, medium such as air or water, ear - describe</p> <p>pitch - high sound, low sound, shorter, tighter, thinner, produce, high-pitched sounds, longer, looser, fatter, produce, low-pitched sounds – explain, length, tightness, thickness</p> <p>volume - loud sound, quiet sound, harder, hit, plucked, blown, stronger, vibrations, louder - explain, strength</p> <p>sounds – louder, closer, sound source, fainter, distance, increases - explain</p> <p>volume of sound - measured in decibels (dB) – measure, data logger</p>		<p>questions, explain, scientific enquiry</p> <p>equipment - measuring tape, hand lens, trundle wheel, ruler, data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C), and metre sticks, rulers or trundle wheels (millimetres, centimetres, metres), accurate measurements</p> <p>observe, observations, compare, group, classify, feature, similarities, differences, make simple connections, measure, systematic</p> <p>tests, instructions, method, prediction, investigation, comparative test, fair test, variable, constant results, information, investigate, investigation, noticing patterns and relationships, conclusion, evidence record, data, table, charts, Venn diagram, labelled diagrams, graphs, timeline, key, explain</p>	
Conceptual Learning Goals - Core Knowledge		Procedural Learning Goals - Skills	
Substantive Knowledge	<ul style="list-style-type: none"> a. Know that when an instrument is played, the air around or inside it vibrates. b. Know that these vibrations travel through a medium, such as air or water, to the ear. c. Know that pitch is how high or low a sound is. Parts of an instrument that are shorter, tighter or thinner produce high-pitched sounds. Parts of an instrument that are longer, looser or fatter produce low-pitched sounds. d. Know that volume is how loud or quiet a sound is. The harder an instrument is hit, plucked or blown, the stronger the vibrations and the louder the sound. e. Know that sounds are louder closer to the sound source and fainter as the distance from the sound source increases. f. Know that the volume of sound is measured in decibels (dB). 	<ul style="list-style-type: none"> a. Know how to describe the movement of air when an instrument is played. b. Know how to describe how a sound travels by vibrations through a medium, such as air or water, to the ear. c. Know how to explain how pitch changes with the length, tightness and thickness of an instrument. d. Know how to explain how volume changes with the strength the instrument is played. e. Know how to explain how volume changes with the length of distance between the sound source and the ear. f. Know how to measure volume of sound in decibels with a datalogger. 	
Disciplinary Knowledge	<ul style="list-style-type: none"> g. Know that questions can help us find out about the world and can be answered using scientific enquiry. h. Know that equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C), and metre sticks, rulers or trundle wheels (millimetres, centimetres, metres). i. Know that scientific enquiries can be set up and carried out by following or planning a method. A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding. A fair test is one in which only one variable is changed and all others remain constant. j. Know that an observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time. k. Know that results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. l. Know that data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions. 	<ul style="list-style-type: none"> g. Know how to ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them. h. Know how to make accurate measurements in standard units, using a range of equipment. i. Begin to know how to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately. j. Begin to know how to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections. k. Know how to use scientific vocabulary to report and answer questions about their findings based on evidence collected, draw simple conclusions and identify next steps, improvements and further questions. l. Know how to gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs). 	

Scientific Enquiries:				
Observing changes Over Time	Noticing Patterns	Grouping and Classifying Things	Carrying out Simple Comparative and Fair Tests	Finding Things Out using Secondary Sources of Information
	Exploring Sound Changing the volumes of sounds Changing the pitch of sounds		Muffling sounds investigation Volume and Distance investigation	Sound Waves How do we hear sounds?

Assessment Criteria

Disciplinary Knowledge and Skills - using appropriate scientific language from the national curriculum:

- ask relevant questions and using different types of scientific enquiries to answer them
- setup simple practical enquiries, comparative and fair tests
- make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gather, record, classify and present data in a variety of ways to help in answering questions
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identify differences, similarities or changes related to simple scientific ideas and processes use straightforward scientific evidence to answer questions or to support their findings.

Substantiative Knowledge and Skills

- use the idea that sounds are associated with vibrations, and that they require a medium to travel through, to explain how sounds are made and heard
- describe the relationship between the pitch of a sound and the features of its source; and between the volume of a sound, the strength of the vibrations and the distance from its source