How is the science curriculum organised?

The science curriculum is organised around Biology, Physics and Chemistry with working scientifically embedded across all of the unit of work. Working scientifically is ever present within the curriculum design ensuring the children have the disciplinary knowledge required to think and work as a scientist.

How are key strands of learning used?

The key strands within the science curriculum add a further layer of knowledge and understanding to the children's learning. Carefully selected strands provide the children with cumulative knowledge over time around key aspects. This cumulative knowledge will allow the children to understand wider themes to a greater level, being able to reason with thoughts and language. This allows the children to engage in topics of conversation and feel confident with their own knowledge and understanding of these areas. It is through these key strands of learning that the children will be able to recognise and link to other subjects.

Science						
	Autumn Term 1	**Autumn Term 2**	**Spring Term 1**	**Spring Term 2**	**Summer Term 1**	**Summer Term 2**
KS1 Cycle A	Living Things and their Habitats		Materials (y1)	Material (y2)	Plants (y1)	Plants (y2)
KS1 Cycle B	Animals, including **Humans** (y1)	Animals, including **Humans** (y2)	**Animals**, including Humans (y1)	**Animals**, including Humans (y2)	Seasonal Change	
LKS2 Cycle A	Living Things and their Habitats	States of Matter	Animals, including Humans (y3)	Animals, including Humans (y4)	Electricity	
LKS2 Cycle B	Rocks	Light	Forces and Magnets	Sound	Plants	

<table>
<tr><td>KS1.CA.T1</td><td>Unit/Outcomes: Sound
• 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.</td></tr>
<tr><td colspan="2">Geographical concepts to organise knowledge:
Physics
Working Scientifically</td></tr>
<tr><td colspan="2">Key strands of learning:</td></tr>
<tr><td colspan="2">Hierarchical Strands: (see progression)
e.g.
sounds and vibrations
Volume
Pitch
(Build year on year)

Cumulative Strands:
e.g. environment
(key features throughout NC)</td></tr>
<tr><td>Learning in Reception:

Children will have made sounds in reception using musical instruments. They will not that if something is hit, it will make a sound.
Children will know that hearing is one of the 5 senses.</td><td colspan="2">Tier 2
<u>New</u>
Vibrates
vocal chords
energy
vibration

<u>Review –</u>
Metal
Solids
Liquids
Gases
Particles
sound</td><td>Tier 3
<u>New</u>
wave
longitudinal wave
vacuum
ambient noise
anatomy
cochlea
pitch
high pitch
low pitch
volume
exerted
pressure</td></tr>
<tr><td>NC objective:</td><td colspan="2">Vocabulary and crucial knowledge:</td></tr>
<tr><td>• identify how sounds are made, associating some of them with something vibrating
• recognise that vibrations from sounds travel through a</td><td colspan="2"><u>Context of study:</u>
This is a stand-alone unit where pupils learn about sound as part of the discipline of physics. It is important to assume that all pupils have very little prior knowledge in this unit. During teaching, extra attention must be given to explicitly teaching the precise meaning of subject specific vocabulary as pupils may be unfamiliar with this. This unit does not link directly with any future science teaching so it is important that knowledge is secured during the unit. In this unit pupils identify how sounds are made and recognise that vibrations from sounds travel through a medium to the ear. The knowledge of sound acquired in this unit will help pupils find patterns between the pitch of a sound and features of the object that produced it. It</td></tr>
</table>

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.	also helps pupils find patterns between the volume of a sound and the strength of the vibrations that produced it. Pupils will know that sounds get fainter and the distance from the sound source increases. Pupils will revisit information taught in KS1CAT2, whereby they will need to identify if something is made from metal (how metal vibrates when it is struck, in turn making sound). Also, they will revisit knowledge taught in KS2CAT2 whereby they must be able to identify solids and know sound waves can travel through solids and to know sound waves can travel through solids (such as metal, stones and wood, liquids (such as water) and gases (such as air). Crucial Knowledge: Sound and Vibrations Know sounds are made when something vibrates. Know that vibrate means to shake with repeated small quick movements. Know metal vibrates when it is struck. Know that different objects make different sounds. Know vocal chords inside our throat vibrate when we speak. This causes the air around the source of the sound to vibrate. The vibration travels through the air to our ear in a wave. Know sound waves can travel through solids (such as metal, stones and wood, liquids (such as water) and gases (such as air). Know the sound travels in a longitudinal wave as each particle pushes the particles next to it. Know that where there is no gas, there is no sound. Sound cannot travel through spaces there is no air. This is called a vacuum. Pitch Know that pitch is how high or low a sound is. Know that the following words would be used to describe low and high pitch sounds. Low pitch- squeak and squeal High pitch- rumble, grunt and boom. Know that pitch and volume are different- volume is how loud and quiet a sound is. Know that there are high pitches and low pitches. Volume Know that the volume of a sound is how loud or quiet a sound is. Know that the stronger the vibrations the louder the sound. The weaker the vibrations the quieter the sound. Know that as sounds travel the vibrations become weaker, because they run out of energy. This means that the volume of the sound will decrease the further away a sound is from an ear to hear it. Working Scientifically:

	Fair testing The children will think about what impact different materials make on sounds. They will test which materials are better at letting sound travel through and which materials are better insulators. How will I be a scientist? • Ask questions: about which materials we know and could use to see if they are insulators for sound. • Plan: a fair test thinking about testing different materials and seeing if sound can pass through and how the different materials effect the volume. Ensure the test is made fair by using the same sound and its volume. • Report: analyse the results and explain how thickness of the insulator plays a part in the volume of the sound. **Pattern Seeking** Children will explore and demonstrate how sound travels through different mediums. For example, they can scratch a desk and listen to the sound through the air and then place your ear on the desk and listen again to see if there are any patterns between solid and gas (air). They will observe what happens when you tighten the string of a guitar. The tighter the string (the shorter the length) the higher the pitch. Tap a drum using different amounts of pressure to see if there is a pattern between strength and volume or pitch. The more force exerted, the louder the sound. How will I be a scientist? • Ask questions: about whether sounds, volume and pitch can be impacted depending on how the object is used or what medium the sound is travelling through. • Observe: how the sound changes when you together or loosen string on instruments or how the sound changes when it travels through different mediums. • Measure: use a datalogger to measure the volume of the sound in decibels. Key scientists of study: **Galileo Galilei:** He is considered a pioneer in the scientific study of sound. He investigated the correlation between the frequency of sound waves and the pitch they produce.