

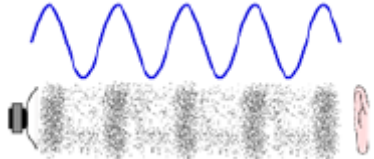
Unit of work
Sound

Year group
4

Prior learning

- Hearing is one of my five senses.
- Sounds can be combined using musical instruments.
- What the word **vibration** means.

Knowledge/ Skills

What is a sound?	A thing that can be heard. The object that makes the sound is called the source.
How is a sound made?	When objects vibrate, a sound is made. The vibration makes the air around the object vibrate and the air vibrations enter your ear. These are called sound waves . If an object is making a sound, a part of it is vibrating , even if you cannot see the vibrations .
How do sounds travel?	Sound waves travel through a medium (such as air, water, glass, stone, and brick). For example, if somebody is playing music in the room next door, the sound can travel through the bricks in the wall.
How do we hear sounds?	When an object vibrates , the air around it vibrates too. This vibrating air can also be known as sound waves . The sound waves travel to the ear and make the eardrums vibrate . Messages are sent to the brain which recognizes the vibrations as sounds. 
How do sounds change?	Pitch: how high or low a sound is. A squeak of mouse has a high pitch . A roar of a lion has a low pitch . Volume: The volume of a sound is how loud or quiet it is. When a sound is created by a little amount of energy , a weak sound wave is created which doesn't travel far. This makes a quiet sound. A small tap of a hammer is used with small amounts of energy and so creates a quiet noise. A vibration with lots of energy makes a powerful sound wave and therefore a loud sound. A powerful, smashing tap of a hammer is used with lots of energy and so creates a loud noise.
How do we measure sound?	Amplitude measures how strong a sound wave is. Decibels measure how loud a sound is. Frequency measures the number of times per second that the sound wave cycles.

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.

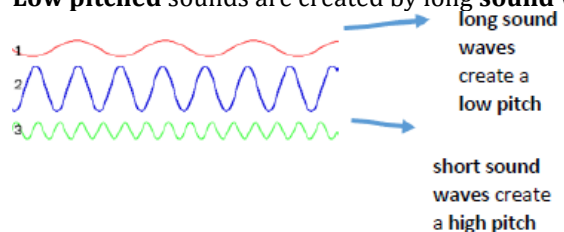
Vocabulary and definitions

Word	Definition
amplitude	a measure of the strength of a sound wave
decibel	a measure of how loud a sound is
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices
energy	the power from sources such as electricity that makes machines work or provides heat
frequency	a measure of how many times per second the sound wave cycles
medium	something that makes possible the transfer of energy from one location to another
pitch	how high or low a sound is
power	Power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery
sound waves	invisible waves that travel through air, water, and solid objects as vibrations
source	where something comes from
transmit	to pass from one place or person to another
travel	how something moves around
vibrations	invisible waves that move quickly
volume	how loud or quiet a sound is

Diagrams

Pitch:

- **High pitch** sounds are created by short **sound waves**.
- **Low pitched** sounds are created by long **sound waves**.



Volume:

- The closer you are to the **source** of the sound, the **louder** the sound will be.
- The further away you are from the **source** of the sound, the **quieter** the sound will be.

Investigate!

- Fill identical jars with different volumes of water. Which one creates the highest pitch?
- Which material would make the best sound defender? How can you investigate this?
- Make musical instruments using different length strings. How do their pitches differ?

Significant Scientists

Christian Doppler

(1803-1853)



Christian Doppler was an Austrian mathematician and physicist. He is celebrated for his principle known as the Doppler effect. This describes how noises sound different as you move toward or away from a noisy object.

Question 1: How does sound travel?	Start of unit:	End of unit:
In a straight line		
In a curvy line		
As a series of vibrations		
By making a noise		

Question 3: The volume of sound is measured in...	Start of unit:	End of unit:
decibels		
centimetres		
kilograms		
miles		

Question 5: On a stringed musical instrument, the pitch can be changed by...	Start of unit:	End of unit:
hitting the string harder		
hitting the string softer		
tightening the string		
loosening the string		

Question 7: The pitch of a sound describes...	Start of unit:	End of unit:
how fast or slow a sound is		
how loud or quiet a sound is		
how low or high a sound is		

Question 9: Sound can travel through...	Start of unit:	End of unit:
the air		
water		
the floor		
all of the above		

Question 2: Sound travels...	Start of unit:	End of unit:
slower than the speed of light		
at the same speed as light		
faster than the speed of light		

Question 4: Sounds gets louder... (tick 2)	Start of unit:	End of unit:
as we move further away from the source		
as we move closer to the source		
the less energy there is when creating the sound		
the more energy there is when creating the sound		

Question 6: The origin of the sound is called the...	Start of unit:	End of unit:
noise		
source		
vibration		
frequency		

Question 8: When a sound hits the ear...	Start of unit:	End of unit:
nothing vibrates		
the whole ear vibrates		
the eardrums vibrate		
the brain vibrates		

Question 10: A pupil blows through two different length straws. Which statement is true?	Start of unit:	End of unit:
The shorter straw will make a higher-pitched sound.		
The shorter straw will make a louder sound.		
The longer straw will make a higher-pitched sound.		
The longer straw will make a louder sound.		