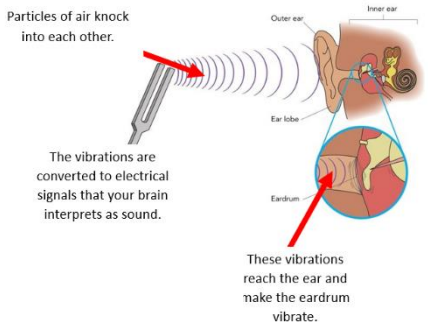
Science Knowledge Organiser

Sound	Yr 4	Main Foci: Physics

Year 4 Sounds

What should I already know from Year 2?

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



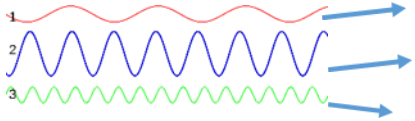
Vocabulary

amplitude	a measure of the strength of a **sound wave**
decibel	a measure of how loud a sound is
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
muffled	where a sound is being obstructed and not as loud as it should be.
pitch	how **high** or **low** a sound is
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**.

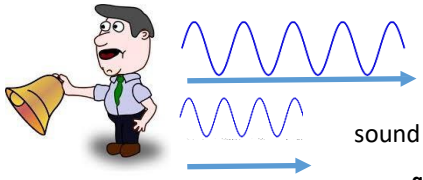


long sound waves create a **low pitch**

short sound waves create a **high pitch**

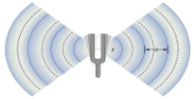
Volume:

- 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.



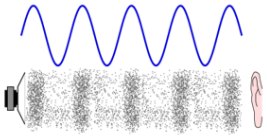
quieter

Sound is made when something vibrates.



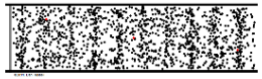
Vibration is a rapid back-and-forth movement.

Sound waves are caused by vibrations in the air.



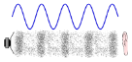
These air particles vibrate too and then bump into other air particles which then start to vibrate and so on.

When an object vibrates, it causes movement in the air particles.



This continues in waves until the vibrations run out of energy. If the vibrations reach your ears, you will hear the sound.

What will I know by the end of the unit?

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 recognises the **vibrations** as sounds.
How do sounds change?	**Pitch:** The **pitch** of a sound is how **high** or **low** it 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 drum 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.

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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 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.		