Colney Heath School ~ Science		
Topic: Sound	**Year: 4**	**Physics**

What should I already know?

Hearing is one of my five senses and I hear with my ears.
Sounds can be combined using musical instruments.
Energy comes in different forms and can be neither created nor destroyed, only changed from one form to another.

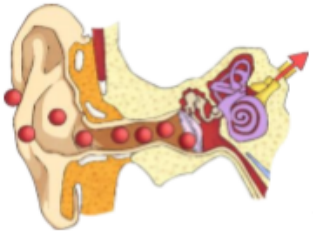
Vocabulary

Conductor	A material that transmits energy
Insulator	A material that does not transmit energy or slows the transmission of energy.
Energy	Energy is how things change and move and a force is needed to transfer the energy. It's everywhere around us and takes all sorts of forms. It takes energy to cook food, to drive to school, and to jump in the air. Sound is a form of energy.
Source	Where something comes from.
Soundproof	Materials that prevent sound from passing through. The materials absorb the sound energy and as a result muffle the sound.
Vacuum	A space where there is nothing. There are no particles in a vacuum so sound cannot travel through it.

Diagrams

How Sound is Made

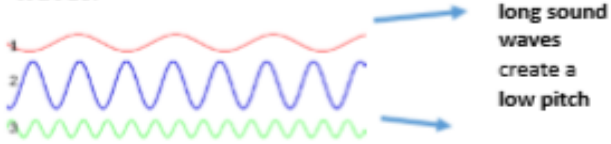
- Like light, sound travels through the air in waves.
- Sound is made by air molecules vibrating.
- When you clap your hands, the air around your hands shakes. This is the air molecules vibrating.



When air molecules inside the ear vibrate, they shake tiny hairs on the insides of the ears.The hairs are connected to nerves under the skin.

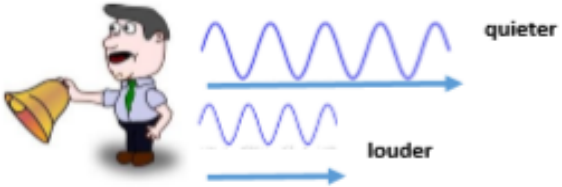
Pitch:

- **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.



Vocabulary

Amplitude	The amplitude of a sound wave determines its loudness or volume. A larger amplitude means a louder sound, and a smaller amplitude means a softer sound.
Sound waves	Invisible waves that travel through air, water, and solid objects as vibrations.
Volume	How loud or quiet a sound is.
Transmit	To pass from one place or person to another.
Vibrations	Invisible waves that move quickly. A vibration with lots of energy makes a powerful sound wave and therefore a loud sound.
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 (such as air, water, glass, stone, and brick) to another.
Decibel	A measure of how loud a sound is.
Pitch	How high or low a sound is.

The Big Picture	By the end of our project we will know that
Physics P1: The universe follows unbreakable rules that are all about forces, matter and energy. P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe. P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.	Sound is generated when an object vibrates; some of the energy from the vibrating object is transferred to the air, making the air particles move. Energy comes in different forms and can be neither created nor destroyed, only changed from one form to another. Sound is a form of energy that transfers in a wave. Sound travels through a medium (e.g. particles in the air, particles in solids and particles in liquids). Sound waves are detected in our ear and the brain interprets this as the sounds we hear. Sound travels at different speeds through different objects; it travels at around 340 metres per second in air, much slower than light travels; this is why we often hear thunder after we see lightning as the light reaches our eye before the sound reaches our ears. Pitch is how high or low a sound is and this is determined by how many vibrations per second are being made by the vibrating object. The number of vibrations per second is called frequency. Volume is how loud or quiet a sound is and this is determined by the amount of energy in the wave (e.g. from how hard or soft a percussion instrument is hit). The volume of a sound is quieter if the listener is further away from the object or source of the sound. .