

## Vocabulary

**amplify** to make a sound louder  
**echo** a sound which reflects off a smooth surfaces and bounces back to the source slightly quieter

**insulator** a material which can slow or stop sound travelling

**particles** tiny bits of matter that make up everything in the universe

**pitch** how low or high a sound is

**sound** vibrations which can be heard. Sound travels through a material. Sound cannot travel in a vacuum

**tuning fork** a steel fork with two prongs that always gives the same note when hit

**sound wave** waves of vibrating air that our ears can sometimes detect as sound

**vacuum** space devoid of all matter  
**vibration** the rapid movement of an object. The result often produces a sound. Not all vibrations can be heard by the human ear.

**volume** how loud or quiet a sound is

# Physics

## Science Y5: Sound

### Key diagrams and knowledge

Sounds are caused by a material **vibrating**. For sounds to travel they require a medium to pass through, which can be a solid, liquid or gas. We hear/detect sounds because the vibrations produced by the source pass through the air. When they reach our ears they cause our eardrums to vibrate, stimulating the nerve endings in the ear so we hear the sound. In space no one would be able to hear you scream because there is no air. It is a vacuum.

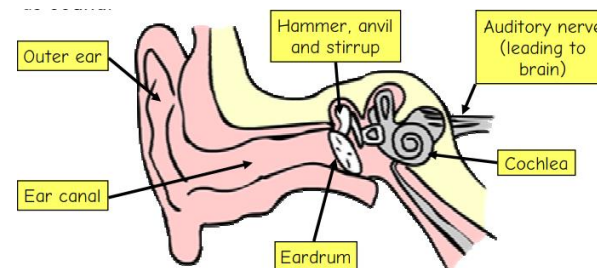
Unlike light, sounds travel in all directions from a source, including above and below. Sounds travel round corners and through materials,

Sounds can be **high** or **low**. This is known as the **pitch** of the sound.

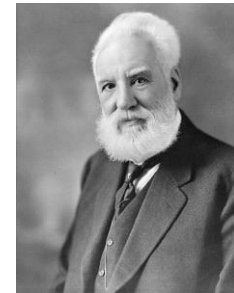
The speed of the vibrations is known as their **frequency**. The higher the frequency, i.e. the faster the vibrations, the higher the pitch. Generally larger objects will vibrate more slowly and therefore produced lower notes. This can be seen by looking at a family of instruments in an orchestra or the length of the bars on a xylophone or glockenspiel or as in the bottles of water in the diagram to the right.

Sounds can also be **loud** or **quiet**. This is known as the **volume** of the sound. The loudness of a sound is dependent on how strong the vibrations are. The size of these vibrations is known as the **amplitude**. The higher the amplitude, i.e. the stronger the vibrations, the louder the sound. This is measured in **decibels** (dB).

As the vibrations pass through the air away from the sound source the vibrations become weaker and therefore the volume of the sound decreases. This is why sounds become fainter as you move away from the sound source.



## Scientists



Alexander Bell  
1847 – 1922  
Inventor of the telephone

Low pitch                      High pitch



### Links to prior learning

Year 1 sound

### Links to other subjects

Science – properties of materials

Maths – interpreting line graphs, pattern

Music – volume and pitch