**Sound**

Sound is a kind of energy carried by waves of vibrating particles. These waves called sound waves, can travel through solids, liquids and gases, but they cannot travel through a vacuum as there aren’t any particles of any sort to vibrate present. For this reason, sound waves can’t travel outside of Earth.

Sound waves are longitudinal waves, meaning that the particles vibrate within the identical direction the wave travels in. As an example, inside a loudspeaker a paper cone vibrates forwards and backwards, sending sound energy into the air. Because the cone moves forwards, it presses together air particles before it. Because it moves backwards, it leaves an area where the particles are more spaced out

Sound waves are frequently represented as a wavy line. The peaks show where particles are squashed. The troughs show where particles are detached. Wave diagrams show the waves per second (frequency), which determines pitch, and their strength (amplitude), which determines how loud or quiet it is.

Wave frequency is measured in hertz. Sound waves with frequencies between about 20 and 20 thousand hertz are heard by the human ear and are commonly described as sound. Sound waves below this range are noted as infrasound, and above it are referred to as ultrasounds.

Loud sounds are waves with an outsized amplitude. As a sound travels further from its source, the amplitude becomes smaller, then, the sound becomes quieter.

The loudness of sound is measured in decibels. The Sulfur Bottom, also known as the Blue Whale, is that the loudest animal within the world, and makes sounds of up to 188dB.

The speed of sound waves are dependent on the substance. They travel quicker in solids than in liquids and quicker in liquids than gases. The speed of sound waves as they travel through dry air at 0 degrees Celsius is 331 metres per second. This speed increases if the air temperature goes up, and reduces if the temperature of the air goes down.

A speed that's faster than the speed of sound within the identical conditions is known as a supersonic speed. One that's slower is a subsonic speed.

Echoes are sound waves that have bounced off a surface and are heard shortly after the first sound. Echoes are often used to find the position of objects. This can be done by timing how long the echoes go for and return to their source.

Ultrasonic sound waves are most frequently used because waves of high frequency bend less around obstacles in their path. Their waves spread out less than ordinary sound waves and provides more accurate information about the surface reflecting them.

Sonar is that the name given to the tactic employed by equipment on board ships to work out the depth of sea water, or to detect underwater objects, like shipwrecks or shoals of fish.

Echoes are utilized in ultrasound scanning to determine inside the body – as an example, to work out on the expansion of an unborn baby inside its mother. Body tissues all reflect ultrasonic waves differently. A computer uses this information to form a picture.