Physics Unit: Sound Misconceptions	
What some pupils think …….	**Notes….**
Pupils don't always recognise that vibrations are the cause of a sound being produced	Sound is a type of energy made by *vibrations*. When an object vibrates, it causes movement in surrounding air molecules. These molecules bump into the molecules close to them, causing them to vibrate as well. This makes them bump into more nearby air molecules. This "chain reaction" movement, called *sound waves*, keeps going until the molecules run out of energy. As a result, there is a series of molecular collisions as the sound wave passes through the air, but the air molecules themselves don't travel with the wave. As it is disturbed, each molecule just moves away from a resting point but then eventually returns to it.
Volume and pitch are the same thing	Pitch is a measure of how high or low something sounds and is related to the speed of the vibrations that produce the sound. Volume is a measure of how loud or soft something sounds and is related to the strength of the vibrations.
Sounds only travels through air	The vibrations can travel through solids, liquids or gases. The speed of sound depends on the medium through which it is travelling. When travelling through air, the speed of sound is about 330 metres per second (m/s). Sound cannot travel through a vacuum because there are no particles to carry the vibrations.
Sounds is slowed down by physical obstructions	Sound can travel through different mediums. Sound travels faster in water than air. Sound will also travel faster in steel than water. The more dense the medium, the more rapidly the wave can travel. Molecules at higher temperatures have more energy, thus they can vibrate faster. Since the molecules vibrate faster, sound waves can travel more quickly. ... The speed of sound is also affected by other factors such as humidity and air pressure.
Sound gets quieter as it travels further because it has 'faded out' or run out of energy	As sound waves travel farther from their source, the more spread out their energy becomes. The same amount of energy is spread over a greater area, so the intensity and loudness of the sound is less. This explains why even loud sounds fade away as you move farther from the source
Hitting an object harder changes the pitch	Hitting an object harder changes the amplitude of the wave, which in turn increases the volume of the sound i.e. makes it louder. The pitch is related to its frequency- the number of waves per second. Hitting the object harder makes a larger wave, but the wave is the same frequency, therefore the note heard is the same but the volume is increased..
In a telephone the sounds are carried through the wire	When you speak into a landline phone, your voice travels in small sound waves. The sound waves are carried to a thin metal disk inside the phone, called a diaphragm, and are converted into electrical energy. The electrical energy travels over wires to another phone and is converted from electrical energy to sound waves again which can be heard by someone on the other end of the phone.
Human voice sounds are produced by a large number of vocal cords	Vocal Cord, either of two folds of mucous membrane that extend across the interior cavity of the larynx and are primarily responsible for voice production. Sound is produced by the vibration of the folds in response to the passage between them of air exhaled from the lungs. The frequency of these vibrations determines the pitch of the voice. The vocal cords are shorter and thinner in women and children, accounting in part for their higher-pitched voices

The pitch of sirens on moving vehicles is changed by the driver as the vehicle passes	The pitch we hear depends on the frequency of the sound wave. A high frequency corresponds to a high pitch. So while the siren produces waves of constant frequency, as it approaches us the observed frequency increases and our ear hears a higher pitch. After it has passed us and is moving away, the observed frequency and pitch drop. The true pitch of the siren is somewhere between the pitch we hear as it approaches us, and the pitch we hear as it speeds away. This is known as the Doppler Effect.
As the sound waves move, the air moves along with them	When sound waves move through the air, each air molecule vibrates back and forth, hitting the air molecule next to it, which then also vibrates back and forth. The individual air molecules do not "travel" with the wave. They just vibrate back and forth
Sound can travel through empty space	Sound waves are travelling vibrations of particles in media such as air, water or metal. So, they cannot travel through empty space, where there are no atoms or molecules to vibrate.
Sound travels more slowly in a solid than a gas	Sound travels fastest through solids. This is because molecules in a solid are packed against each other. When a vibration begins, the molecules of a solid immediately collide and the compression wave travels rapidly.
Sound travels in one direction	All sound waves begin with vibrating matter. The vibrations generate longitudinal waves that travel through matter in all directions.