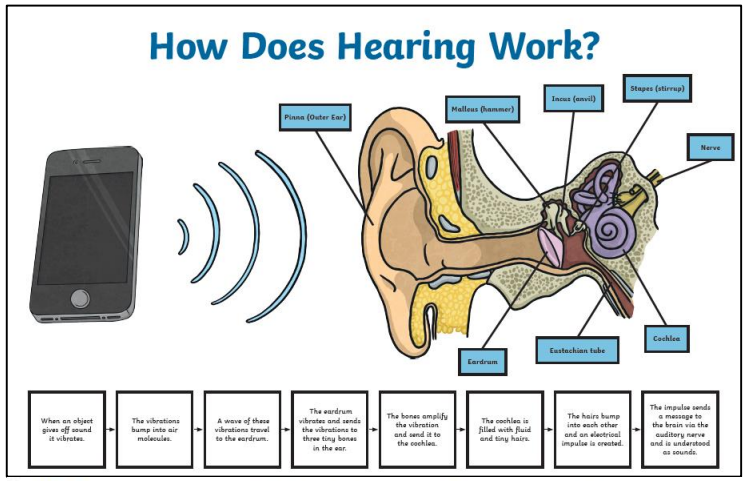
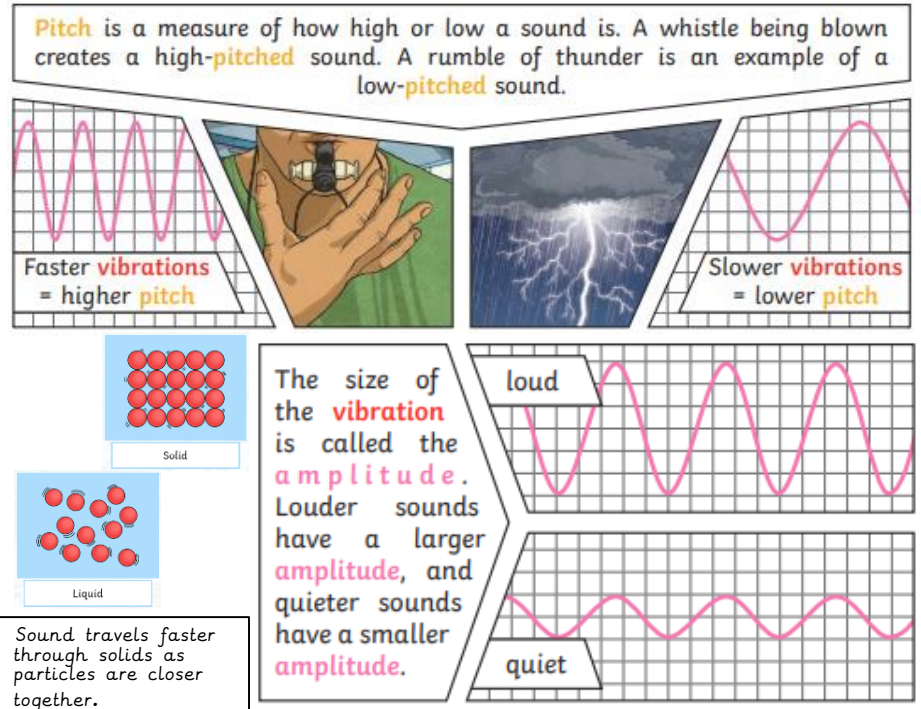
Year 4: Science - Physics - Sound

Glossary

Amplitude	a measure of strength of a sound wave.
Decibel	a measure of how loud a sound is
Distance	A measurement of length between two points.
Ear	the organ of hearing and balance. It has an outer part, a middle part and an inner part.
Frequency	a measure of how many times per second a sound wave cycles
Insulation	material that stops the travel of energy (including sound).
Medium	something that makes it possible to transfer energy from one location to another.
Pitch	how high or low a sound is.
Particles	Solids, liquids and gases are made of particles. They are so small we are unable to see them.
Sound	A type of energy made by vibrations.
Sound waves	invisible waves that travel through the air, water and solid objects as vibrations.
Transmit	to pass from one place or person to another.
Vibration	invisible waves that move quickly.

Key Information





Sound travels faster through solids as particles are closer together.

Curricular Goals

How are sounds made?
Sound can travel through solids, liquids and gases. Sound travels as a wave, vibrating the particles in the medium it is travelling in. Sound is made by air molecules vibrating. When you clap your hands, the air around your hands shakes. This is the air molecules vibrating.

How does sound travel?
Sound can travel through solids, liquids and gases. Sound travels as a wave, vibrating the particles in the medium it is travelling in. So in our example, when you hit the drum, the drum skin vibrated. This made the air particles closest to the drum start to vibrate as well. The vibrations then passed to the next air particle, then the next, then the next. This carried on until the air particles closest to your ear vibrated, passing the vibrations into your ear.

How does the ear work?
Sounds are made when objects vibrate. The vibration makes the air around vibrate, and the air vibrations enter your ear. Inside your ear, the vibrations hit the eardrum and are then passed to the middle and then the inner ear. They are then changed into electrical signals and sent to your brain. Your brain tells you that you are hearing a sound.

How are sounds different?
The pitch of a sound is how high or low it is. The shorter the object the higher the pitch. The longer the object the lower the pitch. With stringed instruments, the tighter the string the higher the pitch of the sound. The louder the sound, the bigger the vibration. The closer you are to the source of a sound, the louder the sound will be. The further away you are from the source of a sound, the quieter the sound will be. The size of the vibration is called the amplitude. Quieter sounds have a smaller amplitude, and louder sounds have a bigger amplitude.