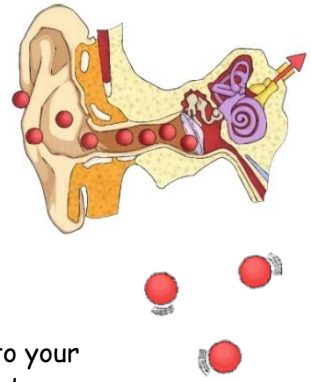
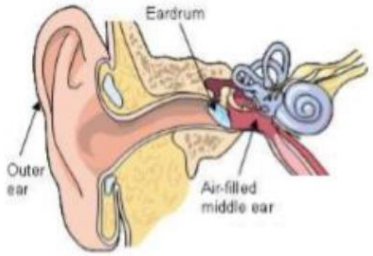
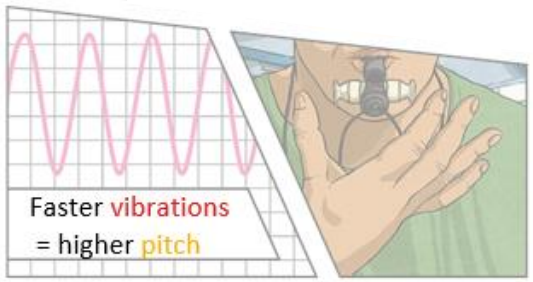
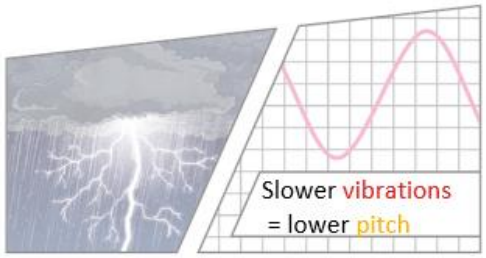
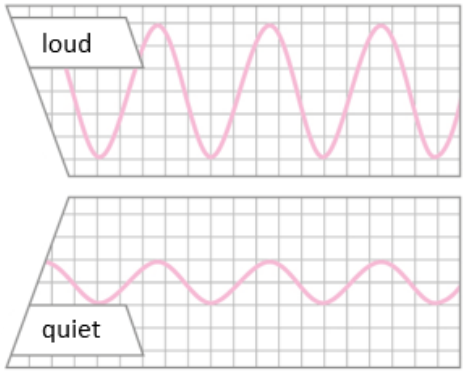
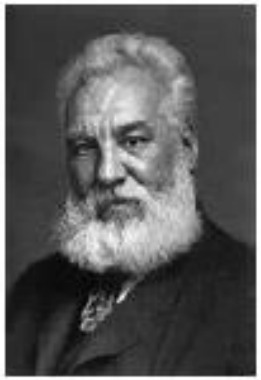
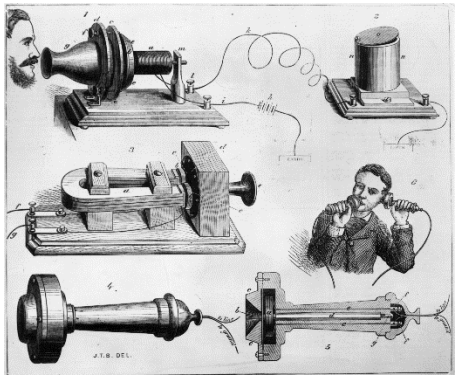
Bridgtown Primary	**Autumn Term Year 4**	**Science Sound**
Prior Knowledge Retrieval • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**How sound is made** Sound travels through the air in waves. When you clap your hands, the air around your hands shakes. This is the air molecules vibrating.  When air molecule inside the ear vibrate, they shake tiny hairs on the insides of the ears. The hairs are connected to nerves under the skin. These nerves send messages to your brain to tell you that you heard a noise.	**Key Vocabulary** **Amplitude** – a measure of the strength of a soundwave **Decibel** – a measure of how loud a sound is **Eardrum**- A part of the ear which is a thin, tough layer of tissue that is stretched out like a drum skin. It separates the outer ear from the middle and inner ear. Sound waves make the eardrum vibrate. **Pitch** – how high or low a sound is **Sound waves** – invisible waves that travel through air, water and solid objects as vibrations **Vibrations** – invisible waves that move quickly **Volume** – how loud or quiet a sound is
How sound travels to the ear Sounds are made when objects vibrate. The vibration makes the air around vibrate, and the air vibrations enter your ear. Our brain hears the vibrations and turns this into a sound.  Sound can travel through solids, liquids and gases. Sound travels as a wave, vibrating the particles in the medium it is travelling in. Sound travels much slower than light, whether in air or in water. You often hear things after you see them, for example, you see the lightning before you hear the thunder.	**Pitch of a sound** The pitch of a sound is how high or low it is. The shorter the object the higher the pitch. The longe rth eobject the lower the pitch. With stringed insturments, the tighter the string the higher the pitch of the sound.   	**Volume of a sound** The louder the sound, the bigger the vibration. 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. The size of the vibration is called the amplitude. Quieter sounds have a smaller amplitude and a louder sound has a bigger amplitude. 

Key Scientist

Alexander Graham Bell

Scottish born scientist (1847) who invented the telephone in 1876 at the age of 29. He formed the Bell Telephone Company in 1887





Outside of the telephone, one of Bell's other famous inventions was the graphophone in 1886. This was a device that could record and play back sound. The graphophone was an improved and more commercialized version of the phonograph invented by Thomas Edison.

Human Ear

The ear is the organ that enables hearing and, in mammals, body balance using the vestibular system (sensory system). In mammals, the ear is usually described as having three parts—the outer ear, the middle ear and the inner ear.

Outer Ear

Consists of the pinna and ear canal.

Middle Ear

Includes the tympanic cavity and three ossicles. The ossicles are three small bones that transmit vibrations used in the detection of sound.

Inner Ear

Contains structures which are key to several senses:

- the semi-circular canals, which enable balance and eye tracking when moving
- the utricle and saccule, which enable balance when stationary;
- the cochlea, which enables hearing.

Protecting your ears

If a sound reaches 85 decibels or stronger, it can permanently damage your hearing
Your ear drum can get perforated or burst if you don't protect your ears.
Ear defenders are used by workmen and those who work in noisy environments to protect their ears from the sound.

Headphones

There are two primary ways that headphones can cause damage to your hearing. Either, you have to be exposed to an extremely loud sound or continuous exposure to loud sounds on a daily basis e.g. listening to loud music every day for a long period of time. This can cause your ear drums to burst or your hearing to be damaged or lost.