Sound Question Sheet Date:_____

1. Name 3 materials that sound can travel through.

_____

2. Complete the following. The denser the material the _____ sound will travel through it.

3. Explain how the vibrations from a ringing bell reach your ear?

_____

Describing Sound Waves

4. The sound waves of a loud sound have a large _____

5. The sound waves of a high pitched sound have a high _____

6. Name 3 properties of a string that will affect the frequency with which it vibrates.

_____

7. An oboe plays an 'A' at 440Hz. How many vibrations does this mean there are per second?

_____

Seeing Sound Waves on an Oscilloscope

8. Which kind of sound will produce a taller wave a loud or quiet sound?

_____

9. Which kind of sound will produce a wave with the peaks spread out, a high pitched sound or a low?

_____

10. Someones voice, when viewed on an oscilloscope produces a very complicated wave. Suggest a reason for this.

_____

Sound Question Sheet Date:_____

11. Fill in the table below using the following items

Iron Air Brick Water

Material	Speed of wave in m/s
	330
	1500
	3000
	5000

12.Give an example showing that light travels faster than sound

_____

_____

13.Name 3 animals that have more sensitive hearing than humans

_____

14.What kind of sounds do people find more difficult to hear as they get older?

_____

15.Why are these kind of sounds the first to go?

_____

16.Why do all animals have two ears?

_____

17.What is the unit for sound loudness?

_____

18.How loud does something have to be for it to risk permanent damage to your ear?

_____

Sound Question Sheet Date:_____

19.What does the term ‘good acoustics’ mean?

_____

20.Soft materials absorb sound. Name an example of how this property is used on a car

_____

Sound Question Sheet Date:_____

Key points

Sound travels by the vibration of particles

The closer these particles are together (i.e. the denser the material) the faster the sound travels

Sound can not travel where there are no particles to vibrate (i.e. in a vacuum)

In air sound travels at 330 m/s. In a vacuum light travels at 300 million m/s

A loud sound has a higher amplitude than a quiet sound (amplitude is shown as the height of a wave on an oscilloscope)

A high pitched sound has a higher frequency than a a low pitched sound (frequency is shown on an oscilloscope by how close together the peaks of the wave are.

The frequency of a sound is how many vibrations there are in a second and is measured in Hertz (Hz).

The length, tension and thickness of a string will all affect how quickly it can vibrate.

Bats can hear sounds up to 120 kHz which is termed ultrasonic as it is above the maximum threshold of human hearing which is about 20 kHz.

Elephants can hear sounds as low as 5 Hz and this allows them to communicate over distances as large as 50 km^2

The unit for loudness is the decibel (dB) and sounds above 90dB risk permanently damaging the hearing.

In the ear vibrations in the air are translated via the ear drum and the small bones of the ear to the cochlea. This causes the fluid in cochlea to vibrate and stimulate hairlike filaments that transmit nerve signals to the brain.

The filaments at the front of the cochlea are responsible for high pitched sounds and as such they are more likely to be damaged by loud sounds.

Soft objects absorb sound as the energy goes into vibrating the bonds between the material rather than reflecting the sound back into the room.

Noise pollution refers to the legal limits surrounding noise around people at home or at work.

Acoustics refers to the clarity with which something can be heard (usually used at music venues)