

Aims

This activity sheet will help you revise waves and sound.

Task 1: Waves

Draw a diagram showing a longitudinal wave and a transverse wave. Label:

- the wavelength
- direction the energy travels
- direction particles vibrate in.

Transverse wave

Logitudinal wave

Task 2: Sound waves

Complete these sentences using the key words.

before echo pressure reflects slower superpose vibrates

A sound wave is created when something _____ .

Sound waves travel as _____ waves in the air or other materials.

Sound waves travel much _____ than light waves. This is why lightning is seen _____ we hear thunder.

When a wave hits a barrier it _____ and travels the other way.


When a sound wave reflects off a surface, it creates an _____ .

Two waves in the same place add together. We say they _____ .

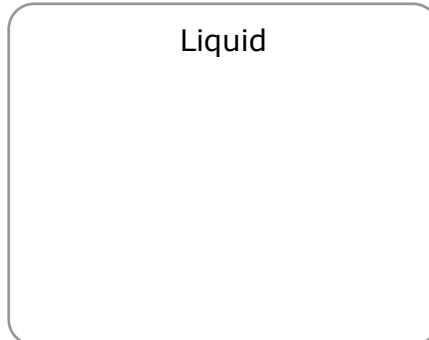
Task 3: How sound waves travel

1 Complete these boxes to show the arrangement of particles in solids, liquids, and gases.

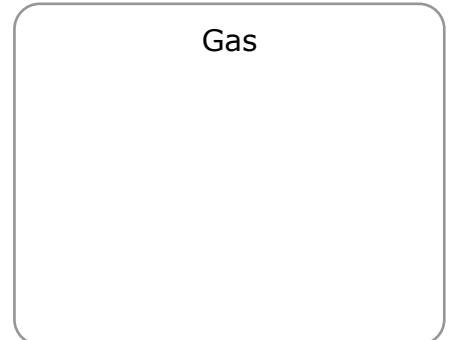
Solid



Liquid



Gas



Once you understand the particle arrangements, complete the following sentences.

2 Sound waves travel when particles pass vibrations to each other.

Sound travels quickest in _____ because the particles are close together and with strong bonds.

Sound travels slowest in _____ because particles are spaced apart from each other.

Task 4: Properties of sound

1 What changes when the loudness of a note changes? _____

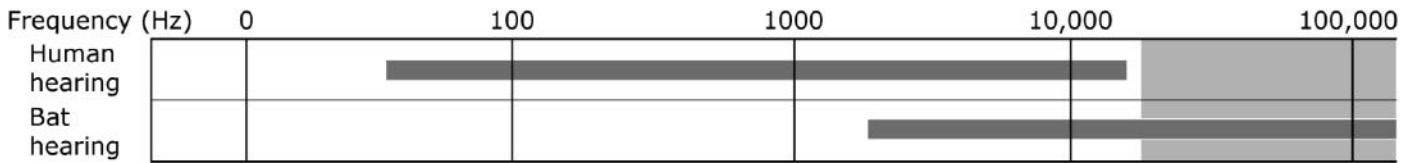
2 How does it change? _____

3 What changes when the pitch of a note changes? _____

4 How does it change? _____

5 What is frequency measured in? _____

Task 5: Hearing ranges



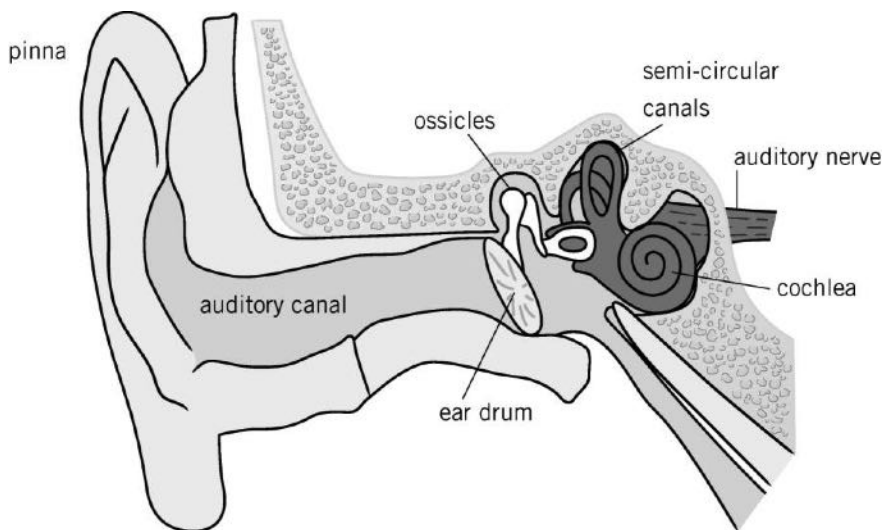
Ultrasound is shown in grey

Choose the answers from these frequencies. You can use them more than once or not at all.

- 10 Hz 20 Hz 100 Hz 200 Hz 2000 Hz 10 000Hz**
20 000 Hz 30 000 Hz

- Write down one frequency below the range of human hearing. _____
- Write down one frequency above the range of human hearing. _____
- Write down one frequency that is higher pitched than 200 Hz. _____
- Write down one frequency bats can hear that humans cannot hear. _____

Task 6: The ear



Fill in the table to explain what each part of the ear does, and how it can be damaged

Part of the ear	What it does	How it can be damaged
ear drum		
ossicles		
cochlea		
auditory nerve		

Use the information in your table to write a full description for someone of how hearing can be damaged.

Task 7: Detecting sound

Describe how a microphone works using the sequence in the table below. Fill in the columns on the left. Hints are given on the right.

Sequence	Hints
1.	Use the term 'sound wave'
2.	What does the sound wave hit?
3.	What happens to the thing the sound wave hits? What is this similar to?
4.	What does this produce? What is this similar to?

Task 8: Ultrasound

Ultrasound has many uses. Give two examples of how ultrasound is used by completing the right-hand column of the table below.

Who uses it?	How is it used? (Write a description)
doctors	<i>key words: reflect, echo</i>
ships	<i>key words: transmitter, receiver</i>