

# Designing ear defenders

People who work in noisy places need to wear ear defenders to protect their ears from damage.

## Task:

Using your knowledge and understanding of sound and hearing, design a pair of ear defenders.

They should be made of a hard outer case and materials filling it to reduce the sound reaching your ears.

- Draw your design on a piece of A4 paper.
- Label the materials you use.
- Give reasons for your choice of materials.
- Use your scientific knowledge of sound to explain how your ear defenders will work.

## Key words:

absorb, air particles, insulator, loud, plastic, quiet, reflect, vibrations

## Level ladder:

What is your target level? Use the level ladder to help you reach it:

To get level	You might have:
3	<ul style="list-style-type: none"><li>• Chosen materials for covering and filling.</li><li>• Stated how the ear defenders will work.</li><li>• Stated how the sound gets to your ears.</li></ul>
4	<ul style="list-style-type: none"><li>• Chosen suitable materials to make the ear defenders.</li><li>• Stated a reason for your choice of materials.</li><li>• Described simply how the ear defenders will protect your ears.</li></ul>
5	<ul style="list-style-type: none"><li>• Chosen suitable materials to make the ear defenders.</li><li>• Stated a reason for your choice of materials, using scientific knowledge.</li><li>• Drawn simple particle diagrams to show how the ear defenders will work.</li><li>• Drawn diagrams to show where sound will be reflected and where it will be absorbed.</li></ul>