

# Sounds in solids, liquids and gases

## Task 1: You get what you pay for

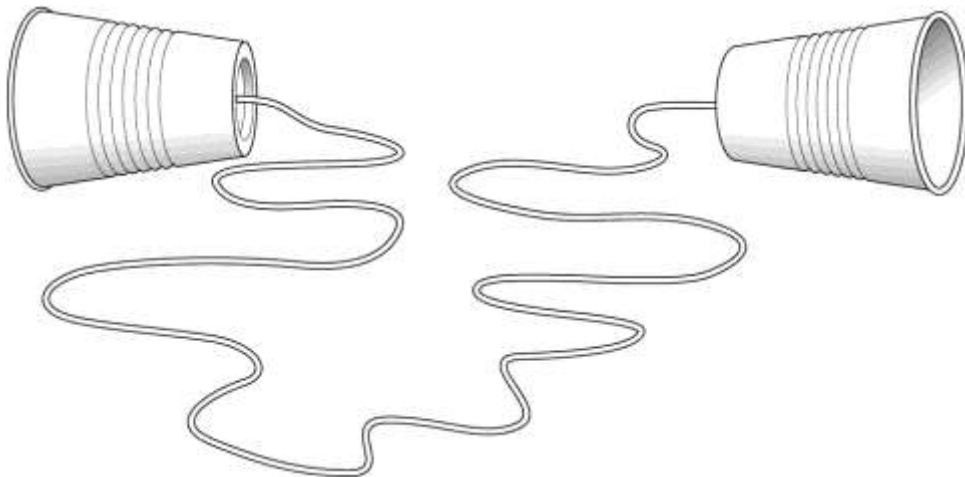
Write a short paragraph to go on a flyer for a rock concert explaining scientifically why the sound is so much better in the most expensive seats.

## Task 2: Investigating

Try out each of the following experiments.

Write down what you find out, and draw a labelled picture showing what produced the sound, and what the sound travelled through.

### Experiment 1: String telephone



Hold the phone so that the string is tight.

Talk quietly to your partner through one cup.

Your partner listens with the other cup pressed to his or her ear and the other ear covered.

Repeat the experiment just using cups (not connected by string).

1 How did the sound reach your ear in each experiment?

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2 With which method could you hear the quietest sounds?

.....

### Experiment 2: Using a hydrophone to listen underwater and in air

Place the radio in its plastic bag under water and listen to it using a hydrophone. The microphone section should be about 10 cm away from the radio and also underwater.

Repeat this with the radio and hydrophone both out of the water.

1 How did the sound reach your ear in each experiment?

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2 With which method could you hear the quietest sounds?

.....

### Experiment 3: Sounds in metal and wood

Tap one end of a long wooden rod and a long metal rod quietly.

Your partner should listen with one ear close to the other end of each rod, and the other ear covered.

1 How did the sound reach your ear in each experiment?

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2 Which way could you hear the quietest sounds?

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## Task 3: Sounds and particles

You can often hear the hiss of a train through the metal rails some seconds before you can hear the train itself.

Use what you learned about the speed of sound in different materials and the particle theory to explain this observation.

You should aim to make your explanation both scientifically accurate and easy to read and understand. Use a mix of words and diagrams and get someone else to read over your work to see if they understand what you have written.