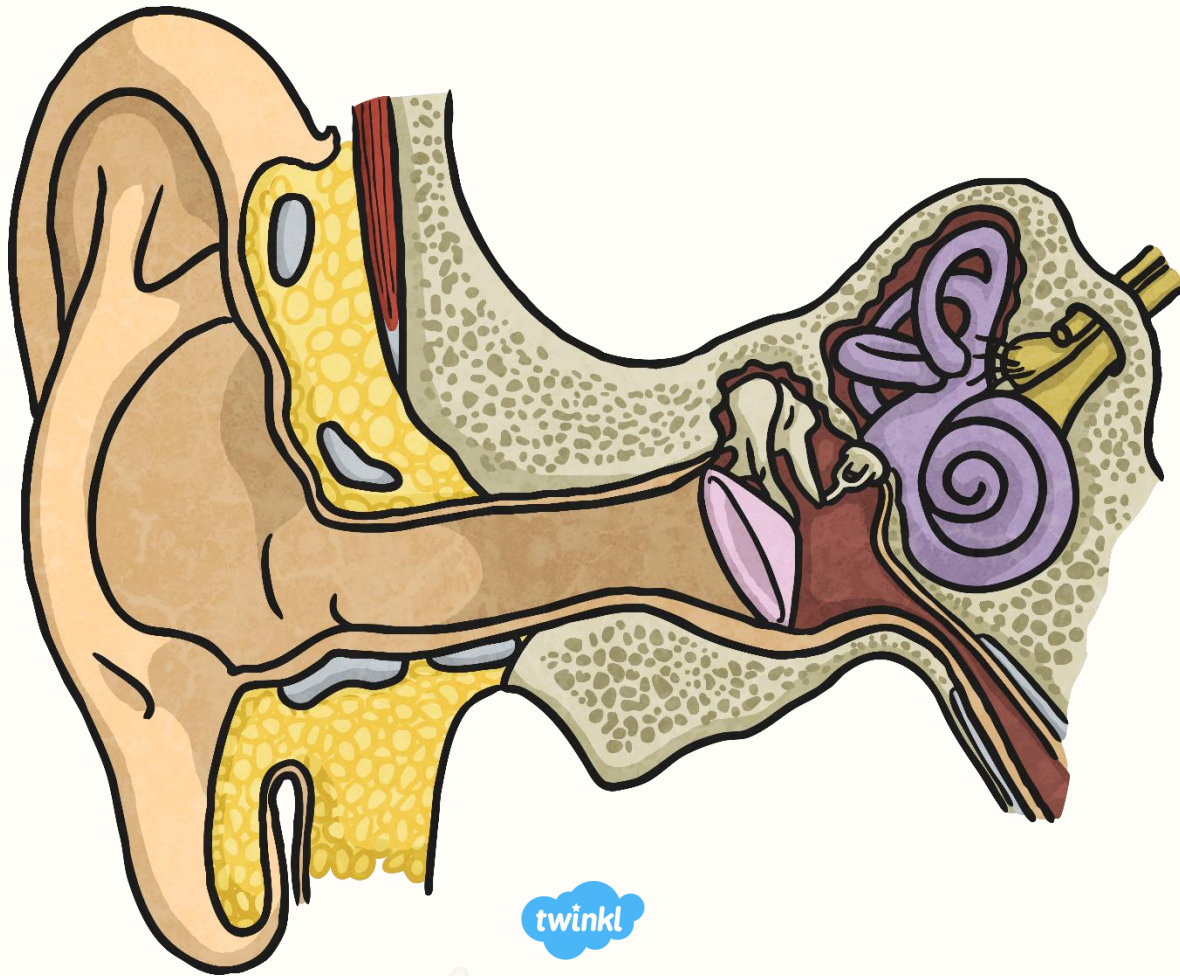




# Science

## Sound

# Hearing Sounds



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The slide features a yellow background with a decorative border. At the top and bottom, there are illustrations of various musical instruments: a red and white drum, an acoustic guitar, a brass instrument (possibly a tuba or euphonium), a pan flute, and a CD. On the left and right sides, there are vertical strings of musical notes, including eighth and sixteenth notes, and a treble clef.

# Aim

- I can explain how different sounds travel.

## Success Criteria

- I can describe how vibrations make sounds.
- I can explain how vibrations change when a sound gets louder.
- I can explain how loud and quiet sounds travel to our ears.



# Vibrations

Sounds are made when something vibrates.

What is vibrating in each of these pictures to make a sound?



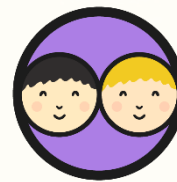


# Vibrations

By placing rice on a drum, you can see the vibrations when you hit the drum, as well as hearing the sound.



# Loud and Quiet



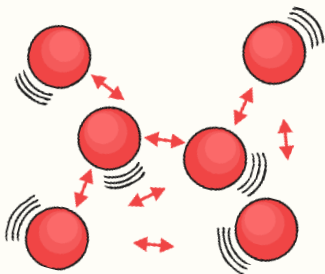
Try this mini investigation to find out if the vibrations change when the loudness of the sound changes. **If you do not have a toy drum at home, can you make one by placing a few layers of cling film/balloon over a large cup or bowl?**

Place some rice on the skin of a drum.

Bang the drum three times: gentle, medium and hard.

Observe the way the rice vibrates each time.

Is there a link between the loudness of the sound and the size of the vibrations?

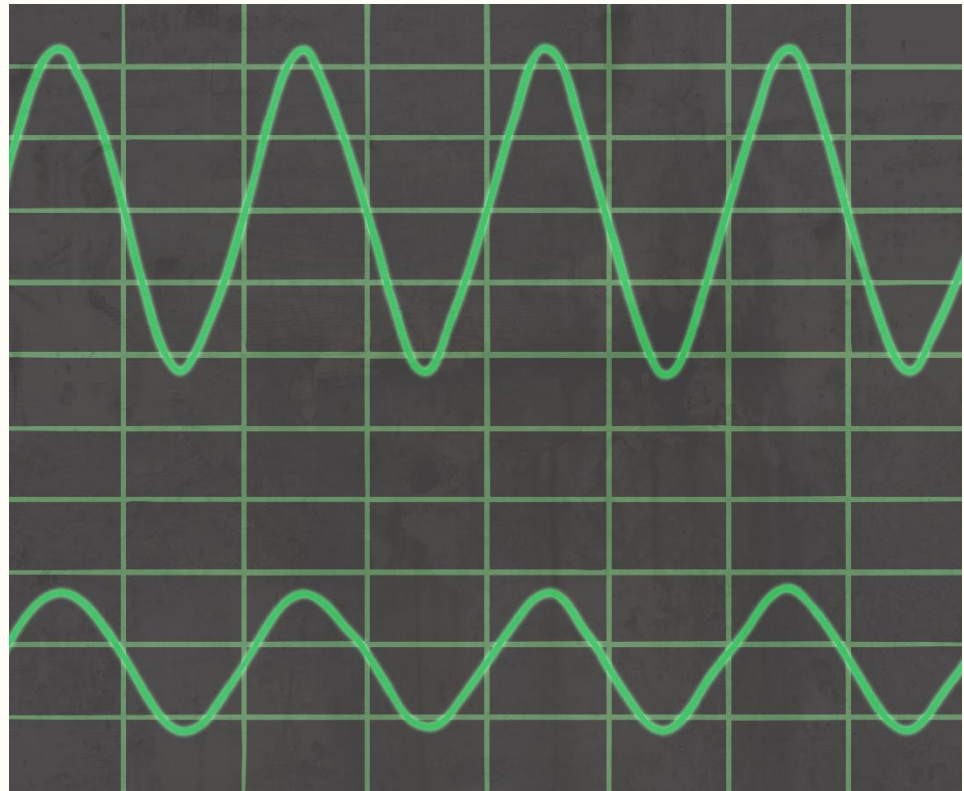


# Loud and Quiet

The louder the sound, the bigger the vibration. You should have noticed that the rice grains vibrated more when you hit the drum harder, creating a louder sound.

The size of the vibration is called the amplitude.

Quieter sounds have a smaller amplitude, and louder sounds have a bigger amplitude.





# How Does Sound Travel




So we know that sounds are caused by vibrations, and the louder sounds have bigger vibrations.


But how do these different sounds reach our ears?

These children have been talking about their ideas.

What do you think of their ideas?



I think sound can travel through the air because the air is lighter and easier to get through than solids or liquids.



Sound moves the air from the source of the vibration into our ears. If we are listening, we will hear the sound.



# How Does Sound Travel



Watch this clip to see if you can identify how different sounds travel.

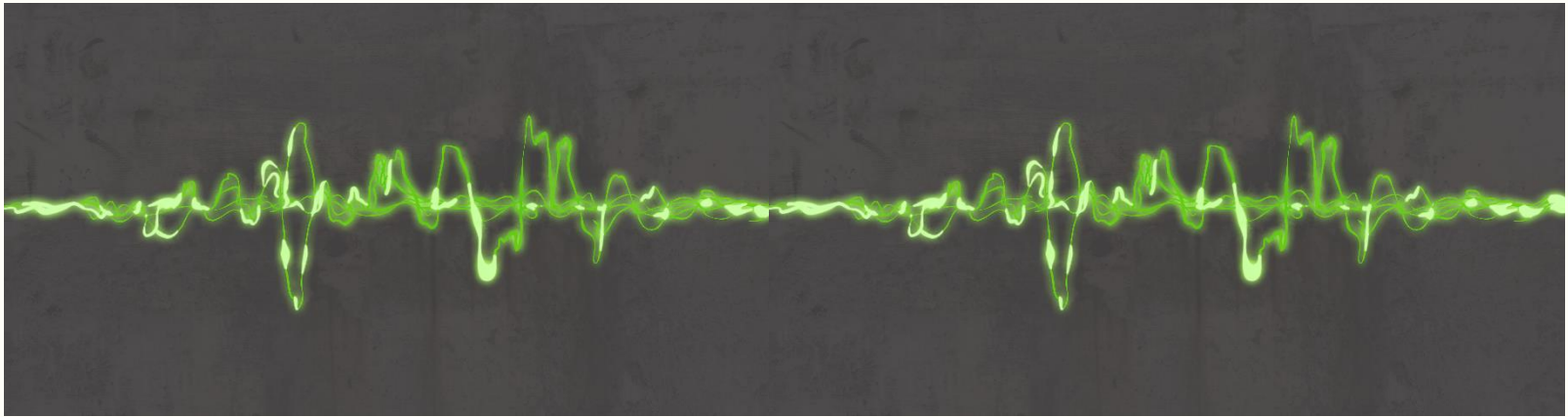


Click on this image to play the video in a new window.

# How Does Sound Travel?

Sound can travel through solids, liquids and gases.

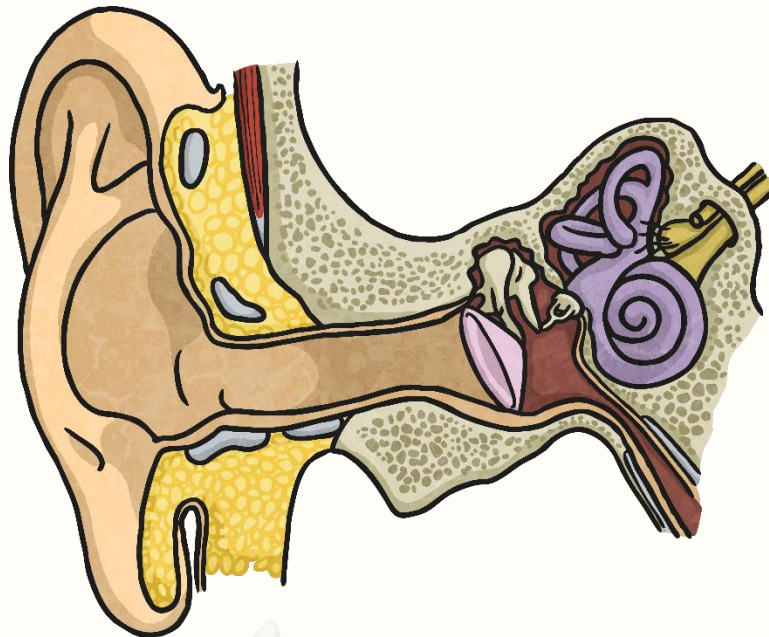
Sound travels as a wave, vibrating the particles in the medium it is travelling in.



So in our example, when you hit the drum, the drum skin vibrated. This made the air particles closest to the drum start to vibrate as well. The vibrations then passed to the next air particle, then the next, then the next. This carried on until the air particles closest to your ear vibrated, passing the vibrations into your ear.

# Hearing Sounds

Once in your ear, the vibrations travel into the ear canal until they reach the eardrum. The eardrum passes the vibrations through the middle ear bones (the hammer, the anvil and the stirrup) into the inner ear. The inner ear is shaped like a snail and is called the cochlea. Inside the cochlea, there are thousands of tiny hair cells. Hair cells change the vibrations into electrical signals that are sent to the brain through the hearing nerve. The brain tells you that you are hearing a sound and what that sound is.





# The Science of Sound



Use the ideas you saw in the clip, or you could alter the ideas to come up with your own way of dramatising and explaining how different sounds travel for the programme.

Use The Science of Sound Activity Sheet to plan your ideas and then practise what you will do and say. Make sure your explanations are clear and easy for children to understand. Have fun and get into character!

You may film your programmes and upload the video to dojo or perform it to your family.

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The Science of Sound

You have been asked to create an educational programme for children to explain how different sounds travel to our ears. The producers of the programme want you to explain the link between the *source* of a sound and the size of the vibrations, and explain how these sounds reach our ears.

Work with your group to plan the episode. All members of your group should take part equally. Make sure your explanations of how different sounds travel are clear and easy to understand. You may choose to use pictures or diagrams to support your explanations. Get into character and have fun!

1. Introduce yourselves and tell the audience what the programme will be about.	2. Explain the link between loud and quiet sounds and the size of the vibrations.
<p>Hello and welcome to The Science of Sound! In this episode we will be...</p>	<p>Sounds are made by vibrations. Loud sounds...</p>
3. Explain how sound travels from a sound source to our ears.	4. Give your audience any more information you think they need to know, then thank them for watching.
<p>The vibrations that make the sound travel to our ears. The vibrations...</p>	<p>Thank you for watching The Science of Sound! We hope...</p>

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You may want to use these words to help you:

sound    small    as    particles    ear    hear

big    source    air    travel    loud    quiet    vibration

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# Aim



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# Success Criteria

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