



Science

Sound

Soundproofing



twinkl

True or False?



Decide whether these statements about sound are true or false!

Sound cannot travel through solids because they are too hard.

Sound travels as vibrations.

Sounds get quieter as you move further away because the sound energy of the vibrations disappears.

The bigger the vibration, the louder the sound.

The faster the vibration, the lower the sound.

High and low sounds are the same as loud and quiet sounds.

True or False?



Decide whether these statements about sound are true or false!

Sound cannot travel through solids because they are too hard. False

Sound travels as vibrations. True

Sounds get quieter as you move further away because the sound energy of the vibrations disappears. False (Sound becomes less loud over distance, it dissipates, but doesn't just disappear.)

The bigger the vibration, the louder the sound. True

The faster the vibration, the lower the sound. False (Faster vibration = higher sound)

High and low sounds are the same as loud and quiet sounds.
False

Absorbing Sounds

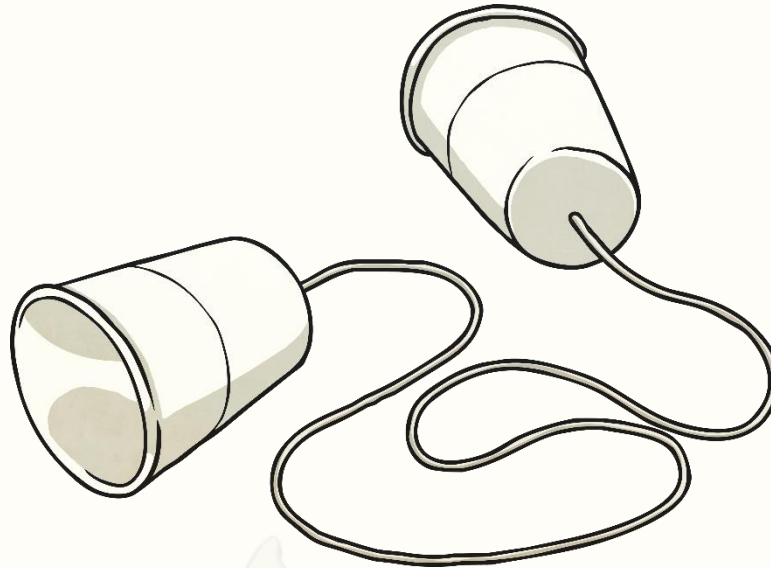


You have learnt about how sound travels, and that sounds get quieter as they travel further away.

You created a string telephone to make sounds louder so that they can travel further.

But sometimes people need to absorb sound, not make it louder!

Can you think of reasons why people may want to absorb sound?



Absorbing Sounds

If you lived near a noisy building site, or a busy nightclub, you would not want to hear the sounds of the machines or music! You would need to find a way to absorb the sounds so your house remained quiet and peaceful. This is called soundproofing.

Maybe your neighbour plays the drums, or has their television too loud. You don't want to hear the sounds from their house! You may choose to soundproof your house, or ask them to soundproof their house.

Many people have noisy jobs and need to absorb sound. Tree surgeons wear ear defenders to absorb the sound of the chainsaws they use to chop down trees.



Soundproofed Studio

This band practise and record their songs in a special room called a studio.

Unfortunately, they have had complaints from people who live near their studio, because their music is too loud. They would like to soundproof their studio so that the sound of the music is absorbed. They want you to investigate the best material to use to soundproof their studio. They want to use the material that absorbs the sound the most.



Soundproofed Studio

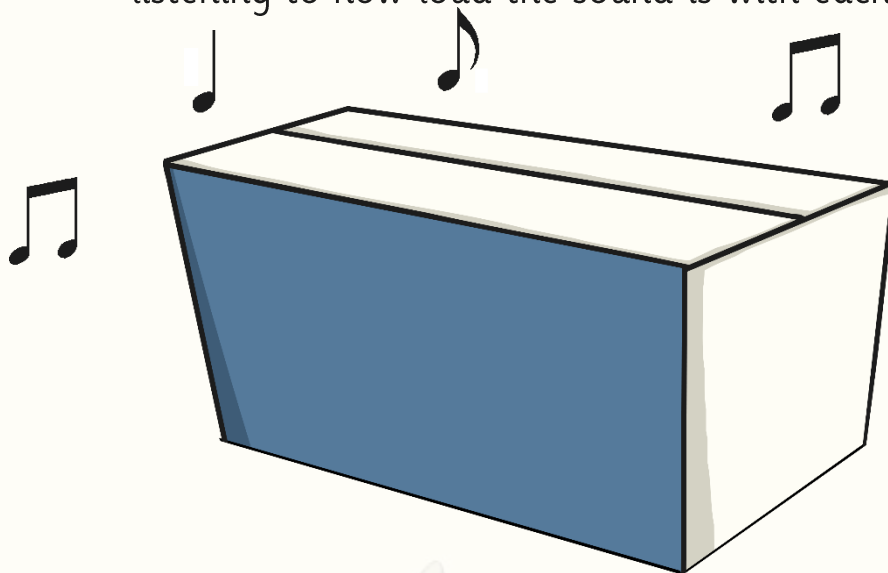


You will play some music and place the music player (or music-playing device) in a box.

The box is like the studio!

Estimate the level of sound on a scale of 1-10 when the music is playing in the studio with no soundproofing. Then you need to try the different materials.

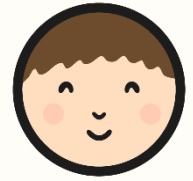
Choose a material and wrap the box in a single layer of the material. Estimate the volume of the music now using the 1-10 scale. Continue testing all the materials and listening to how loud the sound is with each one.



Think about coverings like bubble wrap, newspaper or a towel.

Check your parents are happy for you to use the items first!

Telephone Transmission



Record your measurements or observations on the Soundproofed Activity Sheet.

★ ★ ★ Soundproofed Studio

Type of Material	Loudness of Sound

The band are waiting to hear your suggestions! Use your results to choose the best material for soundproofing your studio. Write a letter to the band explaining your choice. Think of your own name for the band.

Dear _____

Yours Sincerely, _____

★ ★ ★ Soundproofed Studio

Type of Material	Loudness of Sound

The band are waiting to hear your suggestions! Use your results to choose the best material for soundproofing your studio. Write a letter to the band explaining your choice. Think of your own name for the band.

Dear _____

I have tested several different materials and my results show that the one you should use to soundproof your studio is _____

It was the best material because _____

Yours Sincerely, _____

★ ★ ★ Soundproofed Studio

Type of Material	Loudness of Sound

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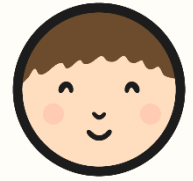
It was the best material because _____

Yours Sincerely, _____

Use these words to help you write your letter:

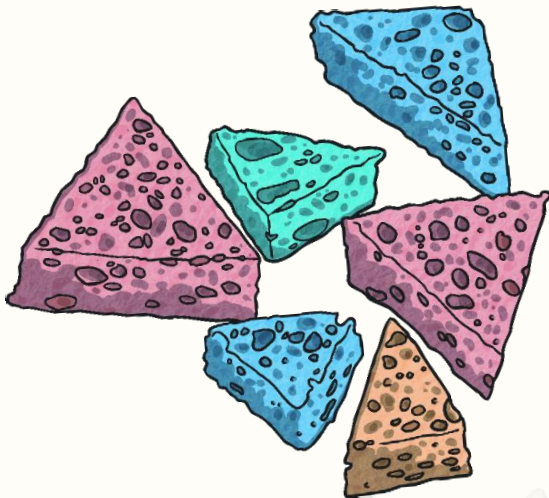
sound energy vibrations through absorb soft hard solid air

Tell the Band!

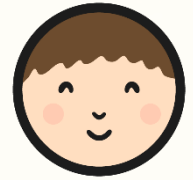


The band are waiting to hear which material they should use! Which material did you find the best at absorbing sound?

Generally, soft, pliable materials that have air pockets in, like a sponge or bubble wrap, will be the best at absorbing sound.



Tell the Band!



Write a letter to the band on your Soundproofed Studio Activity Sheet to explain which material you think is best for soundproofing their studio, and why.



“Thank you for your ideas!
Now we can soundproof our
studio and get back to what
we do best - making music!”