

**SOUND**

**YEAR 3**

**SPRING 1**



# **LESSON 5**

*How do scientists design objects that use sound?*



### Do Now – Retrieval

**1. Circle the correct words in the sentence below:**

To create a louder sound you have to use more/less force. To create a softer sound you have to use more/less force.

**2. Circle the correct words in the sentence below:**

A car horn creates a sound with a high/low amplitude. A whisper creates a sound with a high/low amplitude.

**3. Which unit do we use to measure the amplitude of a sound?**

\_\_\_\_\_

**4. What are three ways to create a sound:**

S \_\_\_\_\_

P \_\_\_\_\_

B \_\_\_\_\_

*From a previous topic:*

**Match up each synthetic material with the raw material that it is made from:**

Plastic	Sand
Paper	Clay
Glass	Wood
Brick	Oil, natural gas or coal



### Read the following passage about scientists who study sound

The science of sound is known as acoustics. A scientist who studies sound is called an Acoustician. These scientists will study sound for a range of applications.



**What is the name for the science of sound?**

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Sometimes their job is to remove sound to make things as quiet as possible – for example in a recording studio when you don't want sound from outside the room to be heard (or if you don't want loud sound being played to leave the room!). The best way to do this is to use a lot of soft material on the walls to absorb the sound.



**Fill in the sentence below:**

**To make somewhere as quiet as possible, it is best to use hard/soft materials.**

At other times, scientists try to make a sound as loud across a distance as possible. For example, in concert halls sound must be heard from long way away so that everyone can hear the music clearly. In sports stadiums, scientists help to make the noise of the crowd as loud as possible to help create an exciting atmosphere. In both cases, using hard, flat surfaces makes this happen.



**Fill in the sentence below:**

**To make somewhere as quiet as possible, it is best to use hard/soft materials.**

Finally, some scientists try to make sound as high quality as possible in headphones and speakers so that people can listen to music and other sounds to the best standard possible.



Match up the different examples with the job of the scientist

Example	Job of the scientist
Recording studio -	- Make the best quality sound possible
Concert hall -	- To block out sound from outside the room
Sports stadium -	- To make sound be heard from a long way away
Headphones and speakers -	- To make the sound as loud as possible



Watch the demonstration by your teacher to show what happens to the amount of sound detected when they cover their microphone <https://youlean.co/online-loudness-meter/>



Why might it be annoying to live next to someone who likes to play the drums?



**Watch the video and answer the questions below**  
([https://www.youtube.com/watch?v=jMs1Z\\_K8cR8](https://www.youtube.com/watch?v=jMs1Z_K8cR8))

Why was the person worried about sound?

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What did they put up on their walls?

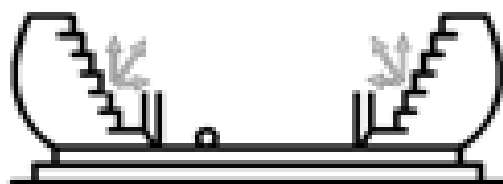
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What changed about the amplitude of the sound before and afterwards?

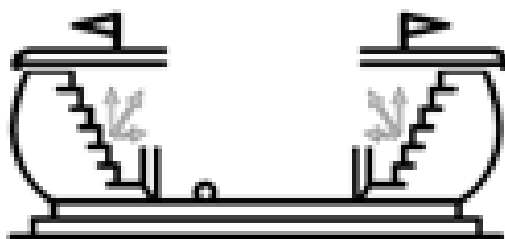
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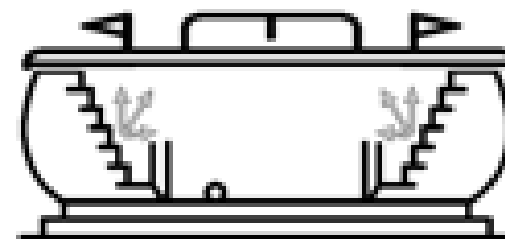
Add sketches to the different designs of stadiums below to show what happens to the sound when a roof is added.



No roof on stadium



A roof over small sections



Complete roof on stadium

Which type of stadium will be the loudest? \_\_\_\_\_

Why is this? \_\_\_\_\_



How should a classroom be designed to create the best sound? Should it have hard or soft surfaces on the walls?





Look at the pictures below. They are both devices that are designed to help people hear. Can you figure out which devices matches each description below?



Digital hearing aid

Digital hearing aids were invented in the 1970s. They have a microphone which picks up sounds and sends them to a small computer with an amplifier that makes the sound louder.

Ear trumpet

An ear trumpet was a tube with a wide cone shape at one end. They were usually made from metal. People would hold the small end of the trumpet to their ear and would point the large opening towards the sound that they wanted to hear. The ear trumpet would make sounds louder so that they could hear them more clearly.



Which do you think is the more modern device? How has our knowledge about science changed over time?



Return to page 4 to complete the learning review