

Teacher Prep

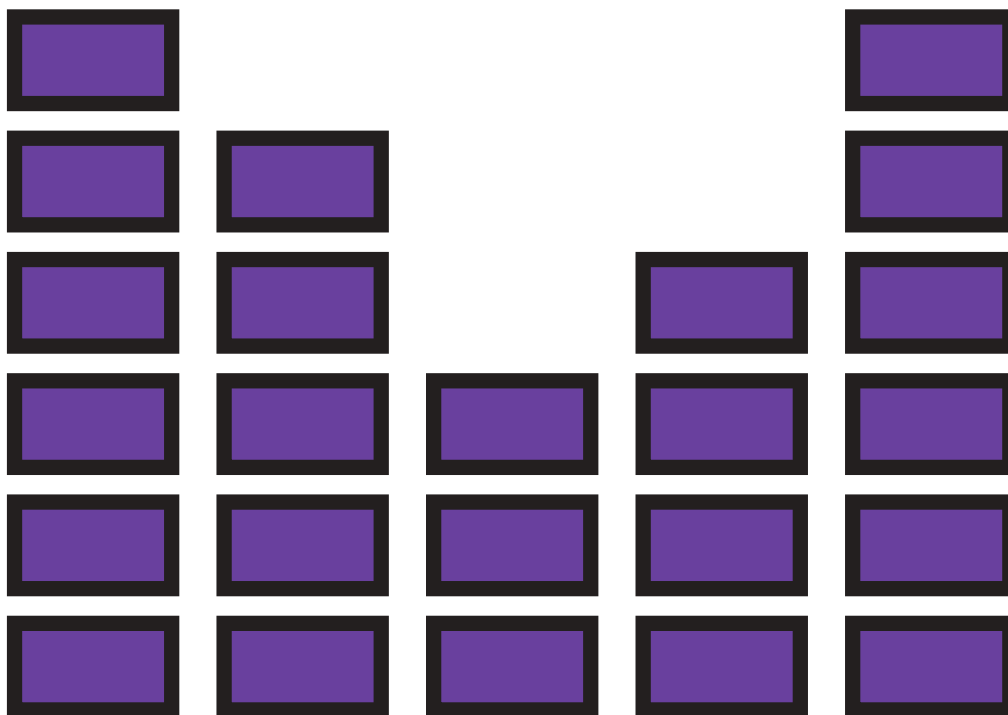
You will need to download a noise meter on a tablet or smartphone. Two examples are:

Android: Sound Meter

https://play.google.com/store/apps/details?id=com.gamebasic.decibel&hl=en_US

Apple: Decibel X

<https://apps.apple.com/us/app/decibel-x-db-dba-noise-meter/id448155923>

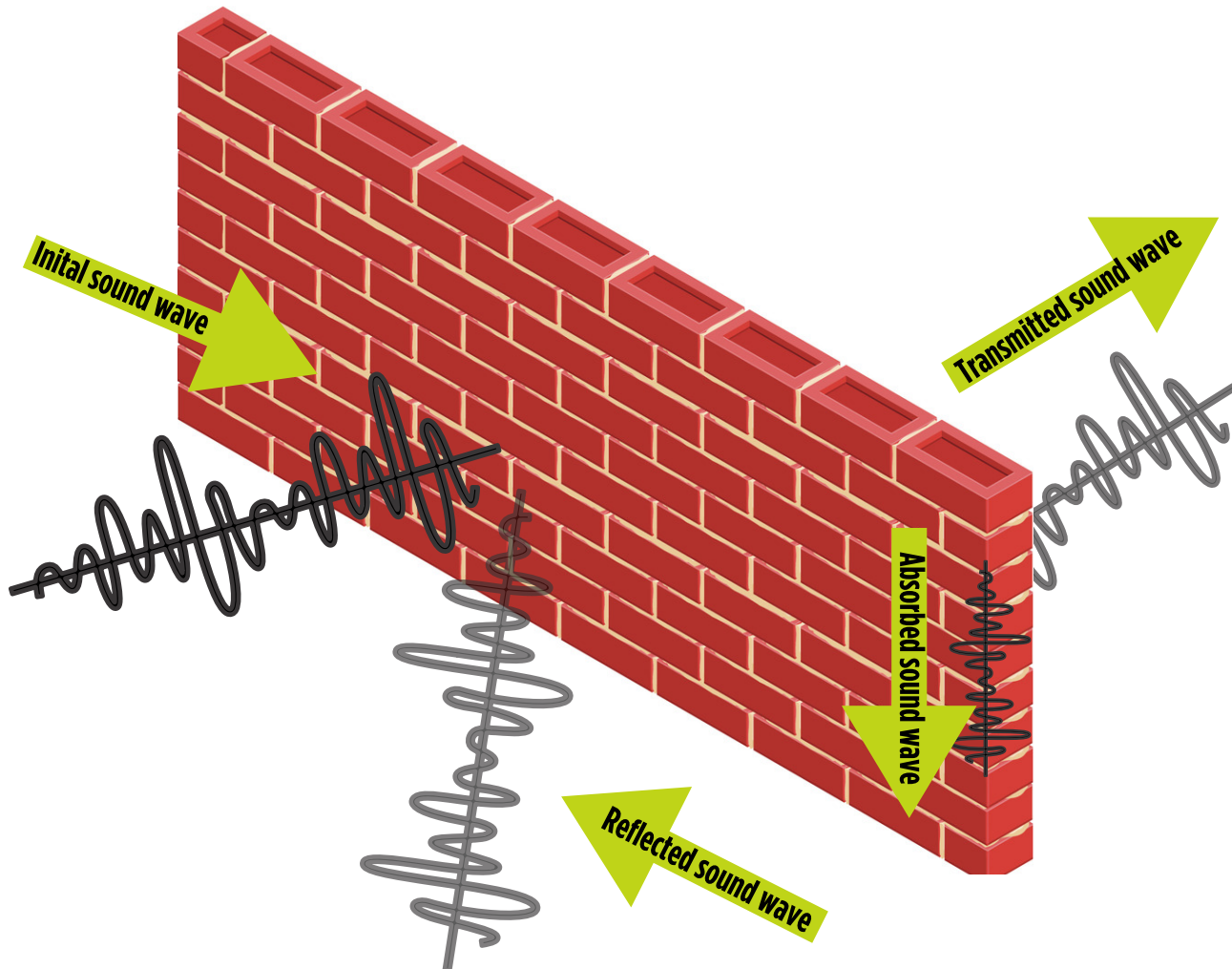


How Sound Moves

Sound waves transfer energy from one place to another by making a material vibrate.

Here is how sound waves work:

1. The initial sound wave hits a wall.
2. Waves are transmitted when they can travel through a material.
3. They are reflected when they bounce off of a material.
4. They are absorbed when they become a different type of energy, like heat.



Requirements for Building a Sound-Proof Room

You sound-proof room must meet the following requirements:

- Use at least 2 materials.
- Make sure the lid of the shoebox can be opened and closed.
- Leave room inside the box for a smartphone to fit. The smartphone represents the band.
- Attach your materials to the inside of the box so that:
 - Most of the sound is absorbed by the lining on the walls, ceiling and floor of the room.
 - Very little of the sound is transmitted through the walls, ceiling and floor.

Testing Your Sound-Proof Room

To test how much sound is transmitted out of your room, you need to create a test sound and measure how well the test sound can be heard outside of the room. Each group will take turns testing their prototypes using the two phones that the teacher used for the demo.

- Your teacher will set an alarm on the phone that will make noise.
- Put this phone in your prototype and put the lid on the securely so there are no gaps.
- Make sure class is quiet.
- Turn the noise meter on and place it on top of the box.
- Wait for the alarm to go off.
- Read the decibel reading on the noise meter and record it so that you can compare your results to the teachers reading and to other groups readings.

Our Decibel Reading: _____