

What is sound and
how can we hear it?

What is sound?

Like light, sound travels through the air in waves, but unlike light, sound is not made of lots of tiny particles. When something makes a sound, like you clapping your hands, it's because when you clapped your hands that shook the air molecules around your hands and made them vibrate (that means they shake quickly back and forth).

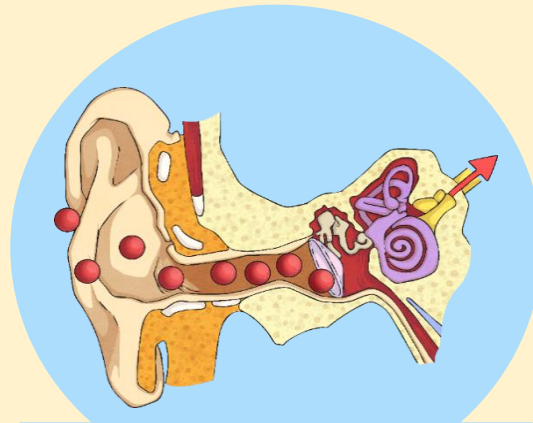
What is sound?

This vibration, in turn, shook the air molecules a little further away from your hands, and they shook the air molecules next to them, and so on, until the air molecules inside your ear were vibrating too (and inside the ears of the people sitting near you too!) Try feeling a speaker when the sound is on to feel this 'vibration'.

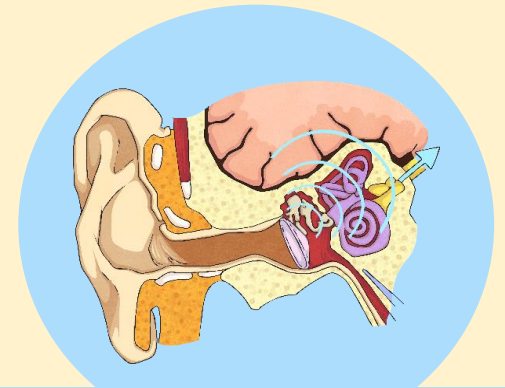
When air molecules inside the ear vibrate, they shake tiny hairs on the insides of the ears.

The hairs are connected to nerves under the skin.

These nerves send messages to your brain to tell you that you heard a noise.



Molecules Vibrating



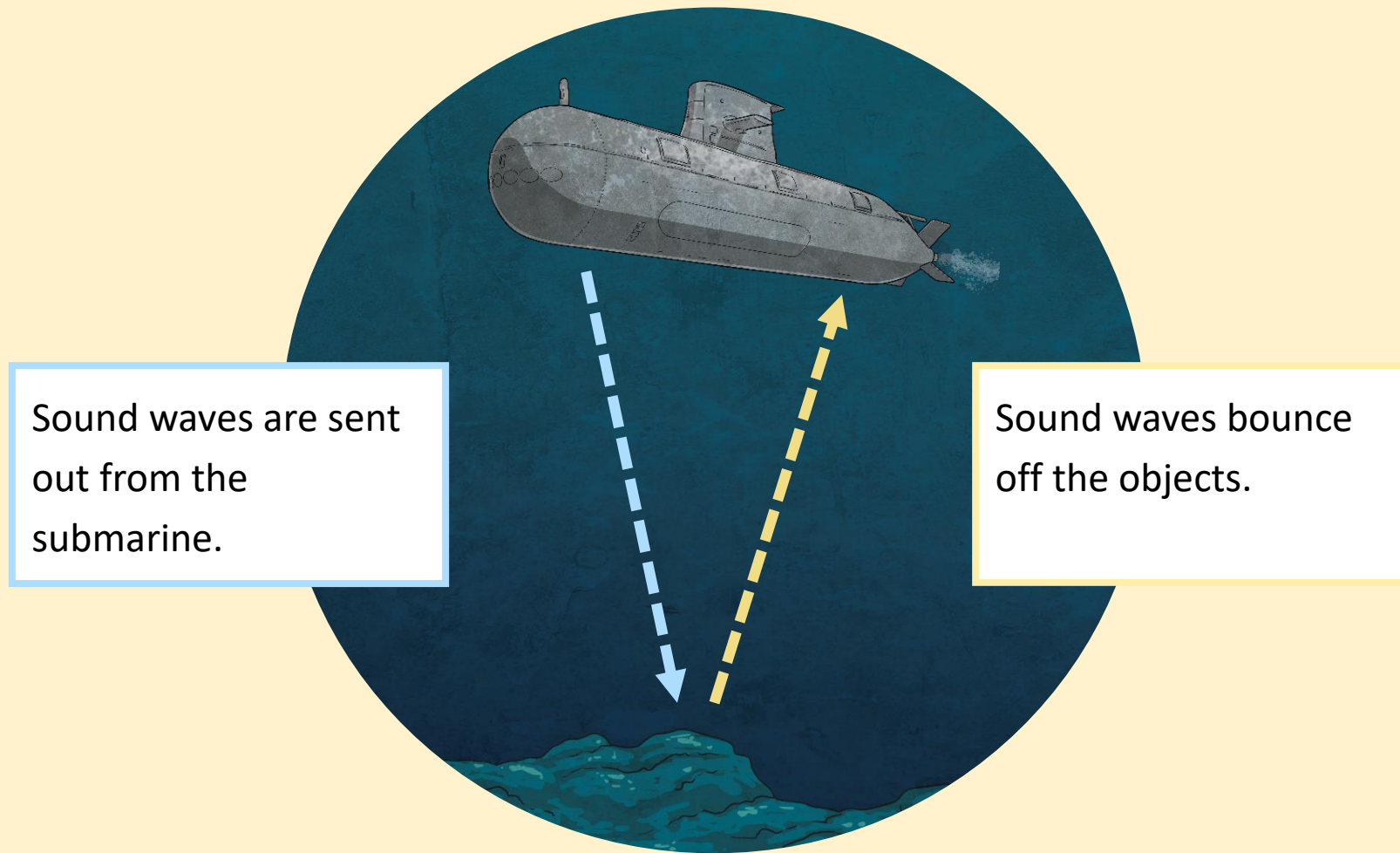
Communicating with the
brain

Sound needs molecules to move. It is impossible for sound to travel in space.

Sound doesn't have to move through air. It can travel through water or metal.

In fact, sound travels faster through water and solids than it does through air.

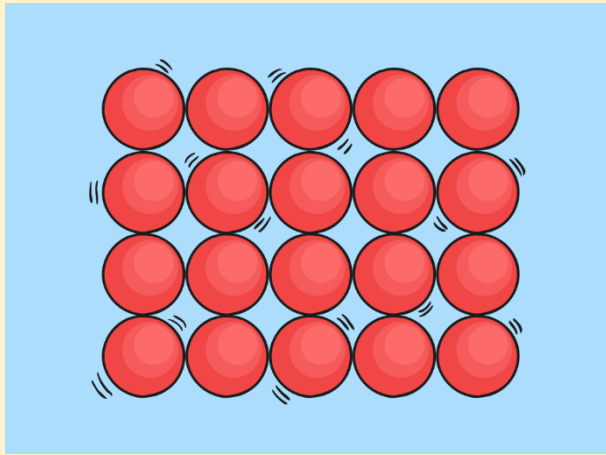
How sound is made...



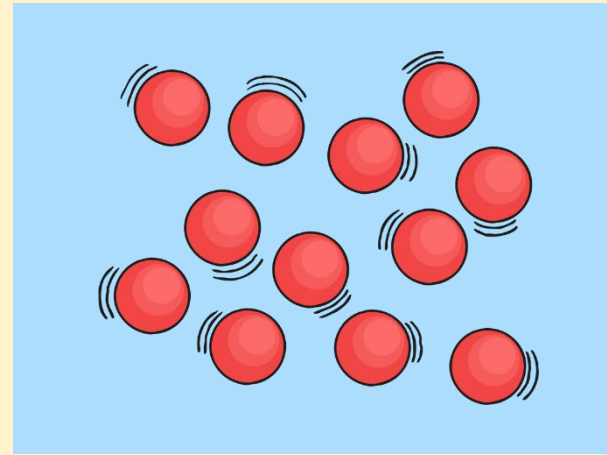
- Sound travels much slower than light, whether in air or in water.
- You often hear things after you see them, for example you see the lightning before you hear the thunder.
- Light travels at 186,000 miles per second.
- Sound travels at 770 miles per hour.

How sound is made...

Why do you think sound travels faster through solids and liquids than gases?



Solid



Liquid

Hint: think about how close the molecules are to each other.

- <https://www.bbc.co.uk/bitesize/topics/zgffr82/articles/zstr2nb>
- <https://www.bbc.co.uk/bitesize/topics/zgffr82/articles/zx9hcj6>

Write an explanation about what sound is and how sound travel.