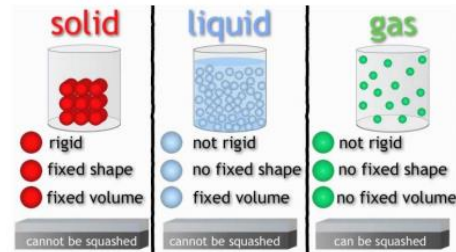
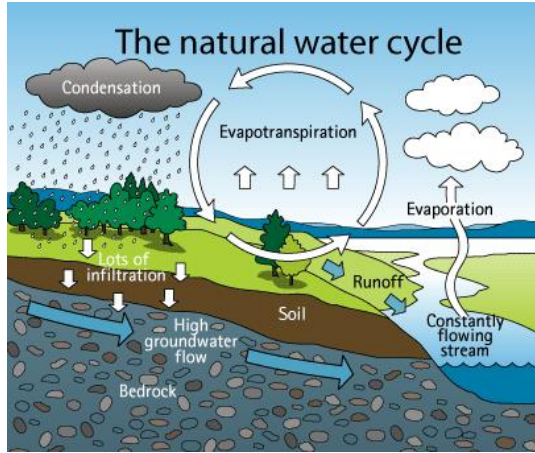


Year 4 Knowledge Organiser - Science



Vibrations - Sounds are made when something vibrates. By placing rice on a drum, you can see the vibrations when you hit the drum, as well as hearing the sound.



| Key Vocabulary | | | |
|----------------|--|----------|--|
| Matter | This is everything that we come across in our lives, like the air you breathe, the clothes you wear, cool drinks – literally everything! | Atom | The basic building block for all matter in the universe. They are extremely small and are made up of a few even smaller particles. |
| Particle | Protons, electrons and neutrons which make up an atom. | Molecule | Molecules are made up of two or more atoms held together by chemical bonds. |

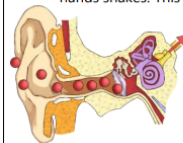
| | | | |
|----------------------|---|----------------------|--|
| Solid | Objects that keep their own shape and do not flow in a given temperature, e.g. cars, books and clothes. Solids are made up of molecules which group together and don't move around. | Liquid | They do not have their own shape but can take the shape of the container they are in and they can flow at a given temperature. Examples of liquids are tea, water and blood. Liquids are made up of molecules which are further apart than in solids and can move around easily. |
| Gas | Air-like substances that can move around freely or flow to fit a container and they don't have their own shape. You can put your hand through gases and you won't feel them. If they get out of their container they can spread easily. Their molecules are spaced apart and jiggle around. | Bubble | A thin sphere of liquid enclosing air or another gas. |
| Water cycle | The process by which water circulates between the earth's oceans, atmosphere and land, involving precipitation, evaporation and condensation. | Evaporation | The process of a substance changing from a liquid state to a gaseous state due to an increase in temperatures and/or pressure. |
| Transpiration | When a plant absorbs water in its roots and then gives off water vapour through its leaves. | Precipitation | When droplets of water fall from the clouds in the form of rain, sleet, hail or snow. |
| Condensation | The conversion of a vapour or gas to a liquid. | Water vapour | Water in its gaseous state. |

Sound Travels to the Ear

Sounds are made when objects **vibrate**. The vibration makes the air around vibrate, and the air vibrations enter your ear. Our brain hears the vibrations and turns this into a sound.

How Sound is Made

- Like light, sound travels through the air in waves.
- Sound is made by air molecules vibrating.
- When you clap your hands, the air around your hands shakes. This is the air molecules vibrating.



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. 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.



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.

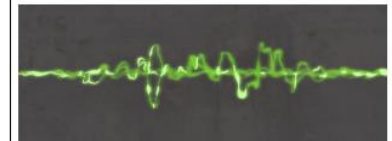


The size of the vibration is called the amplitude.

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

How Does Sound Travel?

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.

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.