

## DETECTING SOUND

### KEY IDEAS

- Sound is detected by Ears
- Excessively loud or high pitched sound can damage ears
- People have different ideas about what sounds are pleasant and unpleasant

### EXAMPLE QUESTIONS

- What do you hear sounds with?
- Do sounds still happen even if there is nobody there to hear them?
- Why do you think that different animals have differently shaped ears?
- What sounds do you find pleasing and which unpleasant?

## WE DETECT SOUNDS WITH OUR EARS

- Ears are complex and sensitive organs.
- Incoming sounds cause our eardrums to vibrate. The eardrum transfers these vibrations to three small bones located in the inner ear, and from there to sensitive cells that convert these vibrations into signals which travel along our nerves to the brain.
- The brain interprets these signals and makes sense of them.
- Ears can be damaged, sometimes permanently, by exposure to loud noises.

## SOUND WAVES TRANSFER ENERGY

- Sound travels in waves.
- Energy is needed to cause the wave vibrations that result in sound waves.
- Sound can be converted into electrical signals and then transmitted in a number of ways: through wires; as optical (light ) signals through optic fibres; as radio signals through the atmosphere.
- Using equipment such as telephones, radios, etc sound oscillations can be

coded and sent over very long distances and then decoded and converted back into sound again.

## **SOUND CAN BE AMPLIFIED**

- Many devices can make sound louder, from simple megaphones to hearing aids.
- Electronic amplifiers can boost the electrical oscillations of sound from a microphone and then deliver them to loudspeakers.

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