Sound devices

Physics - Key Stage 3

Sound waves - Lesson 9

Miss Mason

Recap

1. What is the upper limit of the human hearing range?

2. Identify 4 uses of ultrasound.

M_____ i_____, cleaning _____, e_____ and t_____ m_____.

3. Compare the amplitude of a wave to the frequency of a wave.

The amplitude of a wave is a measure of how much p_____ have been d_____ by v_____.

The frequency of a wave shows how many w_____ have passed a certain point in 1 _____.

4. Describe the journey of a sound wave through the ear.

Sound waves funnelled into the ear by the p_____ and through the e___ c_____. This sound wave then hits the e___d____, causing it to v_____. This then causes tiny bones in your ear called o_____ to v_____ as well. These vibrations travel through the c_____, causing the f_____ inside to vibrate. These vibrations are changed into e_____ i_____ and sent through the a_____ n_____ to the b_____.

Write this down:

A microphone is a device that turns s_____ w_____ into an e_____ c_____.

Put the following steps into the correct order

A The diaphragm vibrates at the same frequency as the sound that hits it.

B An electrical current is generated and flows through the wires towards a speaker that the sound comes out of at the same frequency as the original sound wave.

C The coil moves back and forth over the magnet.

D The sound wave comes in and hits the diaphragm.

E This makes the coil that is attached to the diaphragm vibrate.

Write this down:

A loudspeaker is a device that turns an e_____ c_____ back into s_____ w_____.

Independent task

1. Identify 3 parts of a loudspeaker that are the same as parts in a microphone.

2. Complete the sentences to show how an electrical current is converted back into sound waves by a loudspeaker:

- *C_____ flows into the loudspeaker through a coil of w____ wrapped around a m_____, creating a m_____ f_____.*
- *The magnet v_____ and passes this vibration on to the d_____ and c____.*
- *This causes the a___ particles surrounding the c____ to vibrate, producing s_____ w_____.*

Explain how speaking into this microphone could cause the water droplets on the surface of this loudspeaker to fly into the air

Key words: *sound wave*, *electrical signal*, *current*, *diaphragm*, *coil*, *magnet*, *cone*, *vibration*.

Sound waves are transferred to the microphone as...

This causes the diaphragm inside the microphone to...