Lesson 4: How can we change the volume of a sound?

Quick Quiz

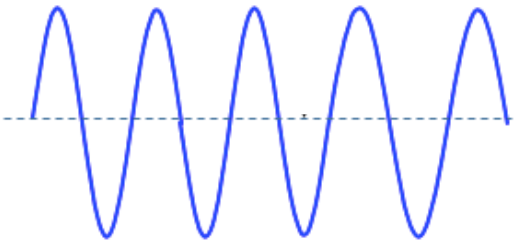
M	O	L	E	C	U	L	E	B	W	E	V
N	F	R	E	Q	U	E	N	C	Y	A	O
V	I	B	R	A	T	I	O	N	N	R	L
V	S	V	A	C	U	U	M	K	A	D	U
H	A	R	M	O	N	Y	O	I	J	R	M
C	I	N	S	U	L	A	T	O	R	U	E
J	S	O	U	N	D	W	A	V	E	M	J
M	U	G	L	A	R	Y	N	X	X	U	G

EARDRUM
FREQUENCY
HARMONY
INSULATOR
LARYNX
SOUNDWAVE
VACUUM
VIBRATION
VOLUME

What is volume?

The volume of a sound is how loud or quiet it is. If a drum is hit hard, it vibrates more and the sound is therefore louder. If a drum is hit softly, there are fewer vibrations so the sound is quieter.

The soundwaves of a loud sound are taller than those of a quiet sound:



Bigger vibrations = louder sound

Smaller vibrations = quieter sound

Investigation time: How can we change the volume of a sound?

Choose the investigation you would like to carry out. You can do more than one!

Investigation 1

How does the loudness of a drum depend on its size?

Equipment:

- Plastic tubs (with lids) of different sizes
- Glass marble

Method:

Drop the marble from the same height onto the different "drums".

To keep the same: the marble and the height from which the marble is dropped
To change: the size of the plastic tub
To measure: the loudness of the sound produced as the marble hits the drum.

Investigation 2

How does the loudness of a twanged ruler depend on the size of vibrations?

Equipment

- A ruler

Method:

Hang a ruler over the edge of a table. Push down the end to different distances before letting go.

To keep the same: the ruler; the length by which the ruler overhangs the table
To change: how far the ruler is pushed down before release
To measure: the loudness

Investigation 3

When making a sound by blowing across a bottle of water, how does the sound depend on how hard we blow?

Equipment

- A half-full bottle of water

Method:

Blow across the bottle of water with different strengths.

To keep the same: the bottle, the amount of water
To change: the strength of the blow across the top
To measure: the loudness

Results

Can you write an -er, -er sentence to explain your results.

Eg. The bigger the plastic tub, the quieter the sound.

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