

Sound on the Move

Trace how vibrations transfer energy from a source to a listener.

5.5.b "sound is the transfer of energy;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline every complete sentence that tells how vibrations or a sound wave pass energy or motion from one object or material to another. Write 1, 2, 3, and so on beside the sentences you underlined, in the order they appear.

From Drum to Ear

- ① At a school concert, a drummer strikes a drumhead. The drumhead moves back and forth, or vibrates. That motion gives energy to nearby air particles. The particles bump their neighbors, passing the energy outward as a sound wave. The air particles do not travel all the way to the audience. They vibrate around their own positions.
- ② Across the room, the sound wave reaches a listener's ear. It makes the eardrum vibrate. Tiny parts inside the ear pass this motion along, and the listener hears the drum. Sound is not a substance that flows like water. It is energy transferred by vibrations through a material, such as air, water, or a solid object.
- ③ Sound can also travel through solids. If a student taps one end of a long wooden desk, vibrations carry energy through the wood to the other end. A student with an ear against the desk may hear the tap clearly. In outer space, where there is almost no matter, ordinary sound cannot travel between astronauts because there are too few particles to pass the vibrations along.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What vibrates first after the drummer strikes it?

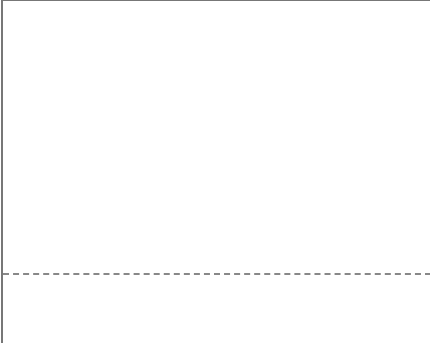
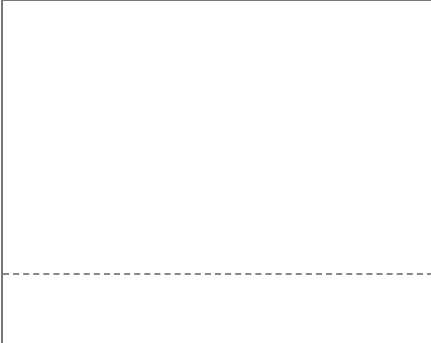
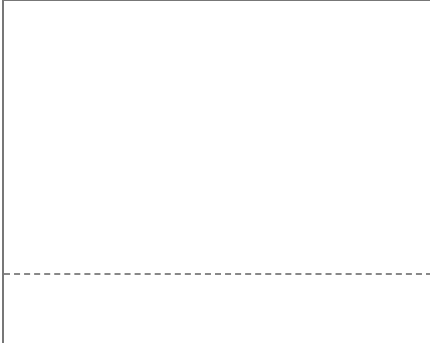
2 Why can sound reach the audience even though the same air particles do not travel across the room?

3 Name two materials that can transfer sound energy. Why can ordinary sound not travel between astronauts in outer space?

4 Describe how a tap at one end of a wooden desk can be heard at the other end.

3 YOUR TURN _____ Your own words

Create a three-panel sketch of a new sound situation, not a drum or a desk tap. Label Panel 1 with the vibrating source, Panel 2 with the material that carries the vibrations, and Panel 3 with the receiver. Then write two sentences explaining how energy moves through your situation.

		
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PART 1 • READ AND MARK

Underline every complete sentence that tells how vibrations or a sound wave pass energy or motion from one object or material to another. Write 1, 2, 3, and so on beside the sentences you underlined, in the order they appear. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What vibrates first after the drummer strikes it?	The drumhead vibrates first.
2	Why can sound reach the audience even though the same air particles do not travel across the room?	Each air particle vibrates near its own position and bumps nearby particles, passing energy outward.
3	Name two materials that can transfer sound energy. Why can ordinary sound not travel between astronauts in outer space?	Air, water, and solid objects can transfer sound energy. Space has too few particles to pass vibrations along.
4	Describe how a tap at one end of a wooden desk can be heard at the other end.	The tap makes vibrations that carry energy through the wood to the other end of the desk.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1 label: source, whale vocal cords; Panel 2 label: medium, water; Panel 3 label: receiver, second whale's ear. The whale's vocal cords vibrate and transfer energy to water particles. The water transfers the energy to the second whale's ear.

Accept equivalent wording that identifies vibrations transferring energy through a material. In the sketch, accept any accurate source, medium, and receiver sequence, as long as the student shows that sound needs vibrating matter to travel.