

How Sound and Light Travel in Waves

READ ALOUD PASSAGE

Sound travels as a wave. As it moves, the particles of the material it travels through push back and forth in the same direction as the wave. Scientists call this a longitudinal wave. Sound needs a medium, a solid, a liquid, or a gas, to travel through. Without particles to carry it, sound has nothing to push against. Sound travels fastest through solids, a little slower through liquids, and slowest through gases, because the closer together the particles are, the faster they can pass energy to each other. In a vacuum, like outer space, there are no particles at all, so sound cannot travel. If something exploded in space, it would be completely silent. Light also travels in waves, but light waves work differently. A light wave is a transverse wave, and unlike sound, light does not need a medium. Light can travel through empty space. Light travels incomparably faster than sound. That is why you see a flash of lightning before you hear the thunder that came from the same bolt. The light reaches your eyes almost instantly, while the sound takes much longer to arrive.

Activity 1

Fill in the blank with the correct word from the word box.

WORD BOX

medium longitudinal compression rarefaction vacuum

1. The material that sound travels through is called a _____.
 2. A wave where particles move back and forth in the same direction as the wave is called a _____ wave.
 3. A zone where particles are pushed close together is called a _____.
 4. A zone where particles are spread apart is called a _____.
 5. A space with no particles at all is called a _____.
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Activity 2

Circle True or False for each statement.

1. **True / False** Sound can travel through a vacuum.
2. **True / False** Sound travels fastest through solids.
3. **True / False** Light needs a medium to travel through, just like sound.
4. **True / False** We see lightning before we hear thunder because light travels faster than sound.

Activity 3

Because / But / So Complete each sentence three different ways.

Sound cannot travel through a vacuum because

Sound cannot travel through a vacuum but

Sound cannot travel through a vacuum so
