

Follow the little wiggle

How Speakers Turn Waves Into Sound

Name _____

Date _____



A soft note came from the speaker on the table. Little Wonderer found the smooth wave drawn in the notebook. “Could that wiggle become a sound?” Big Wonderer nodded. A speaker changes an electric signal into vibration: a back-and-forth motion. For a pure note, that motion follows the smooth shape of a sine wave.



The speaker’s cone was a thin piece of paper shaped like a shallow bowl. Behind it, a coil of wire sat near a magnet. The changing signal made the coil push and pull against the magnet. The attached cone moved back and forth, squeezing nearby air, then letting it spread out.



Big stretched plastic wrap over a bowl and added a pinch of rice. Little hummed nearby. Nothing moved yet. Big gently tapped the bowl, and a few grains hopped. The tight wrap was vibrating beneath them. Rice made a small motion easier to see. Little drew the tiny hops.

speaker	a device that changes an electric signal into sound
cone	the thin paper or plastic part that moves air
coil	wire wound into loops
magnet	a part that pushes or pulls on the coil when its signal changes
vibration	a back-and-forth wiggle
pressure wave	a traveling pattern of squeezed and spread-out air
eardrum	a thin surface inside the ear that vibrates with sound
pitch	how high or low a sound seems

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A toy drum waited beside the bowl. Big gave its rim a gentle tap. Rice on the drumhead bounced. The drumhead and the bowl's wrap could both vibrate. Faster wiggles make a higher pitch, or higher-sounding note. Bigger wiggles make a louder sound. Little kept the taps soft.



Big spoke softly into a paper cup. Little listened at a second cup, joined by a taut string. The first cup's bottom vibrated. The string carried the motion to the other cup. That cup moved the air near Little's ear. A wiggle could travel through more than air.



A pattern of squeezed and spread-out air traveled as pressure waves. Air wiggled in place. Little's eardrum vibrated, helping the ear sense sound. "Where does the wiggle go after it leaves the speaker?" Little wondered.

1. Why must the cone be attached to the coil?
2. What do the hopping rice and the listening ear have in common?
3. How would faster wiggles change a note differently from bigger wiggles?

Your turn

Write one command sentence for watching a vibration.

Example: Hum near the bowl, then draw how the rice moved.
