

Chapter 10

Sound Waves: Characteristics and Applications

“ Sound helps us communicate, connect, and explore the world around us.”



Listen



Understand



Experiment



Apply

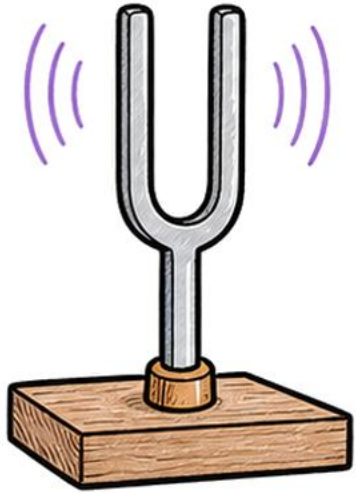


Innovate

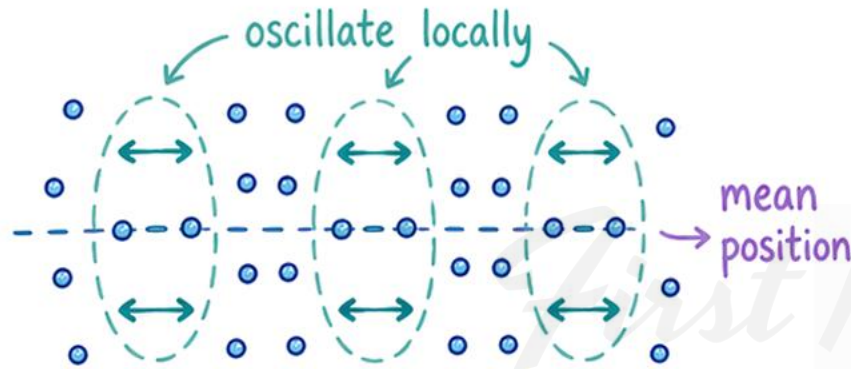


SOUND WAVES: CHAPTER ROADMAP

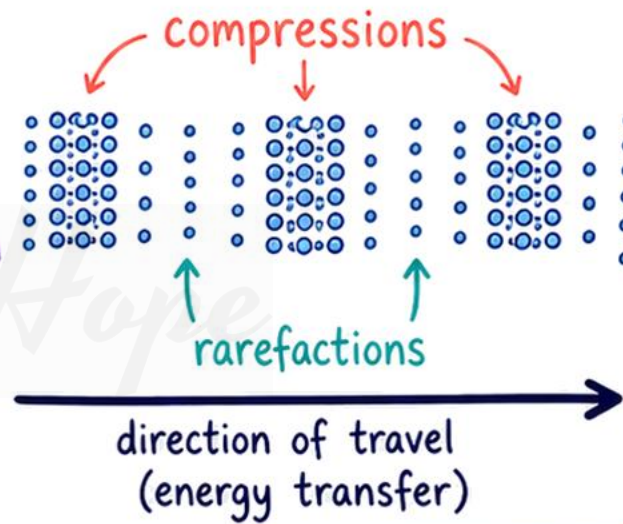
VIBRATING
SOURCE



MEDIUM PARTICLES
OSCILLATE



SOUND WAVE
TRAVELS



EAR / DETECTOR



BIG QUESTIONS

1. How is sound produced?

2. Why does sound need matter?

3. How do frequency, amplitude and reflection help us?

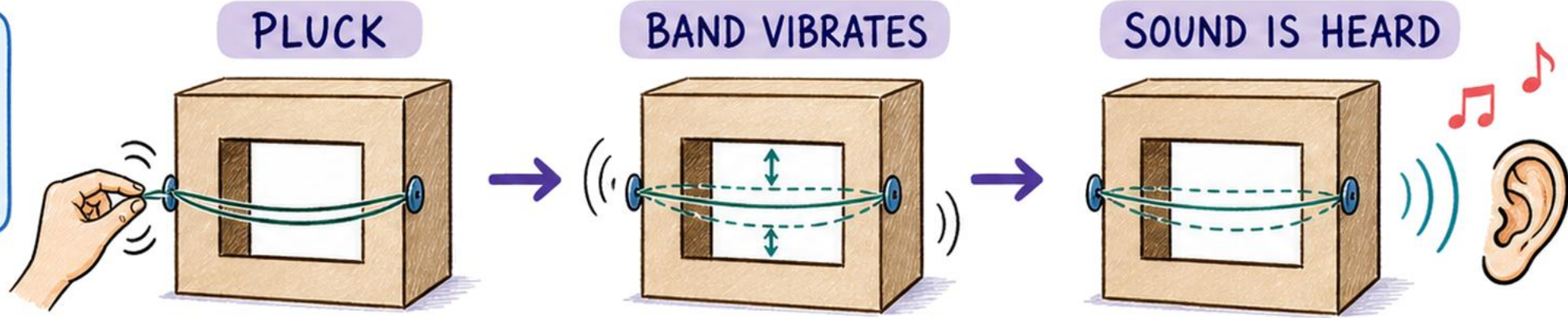
IN SPACE: NEAR-VACUUM → NO DIRECT SOUND



Astronauts use radio; a speaker makes sound inside the suit.

SOUND IS PRODUCED BY VIBRATIONS

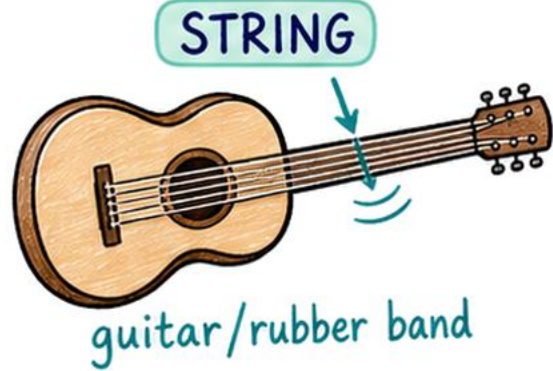
VIBRATION =
repeated to-and-fro
motion of an object



When vibration stops, sound stops.

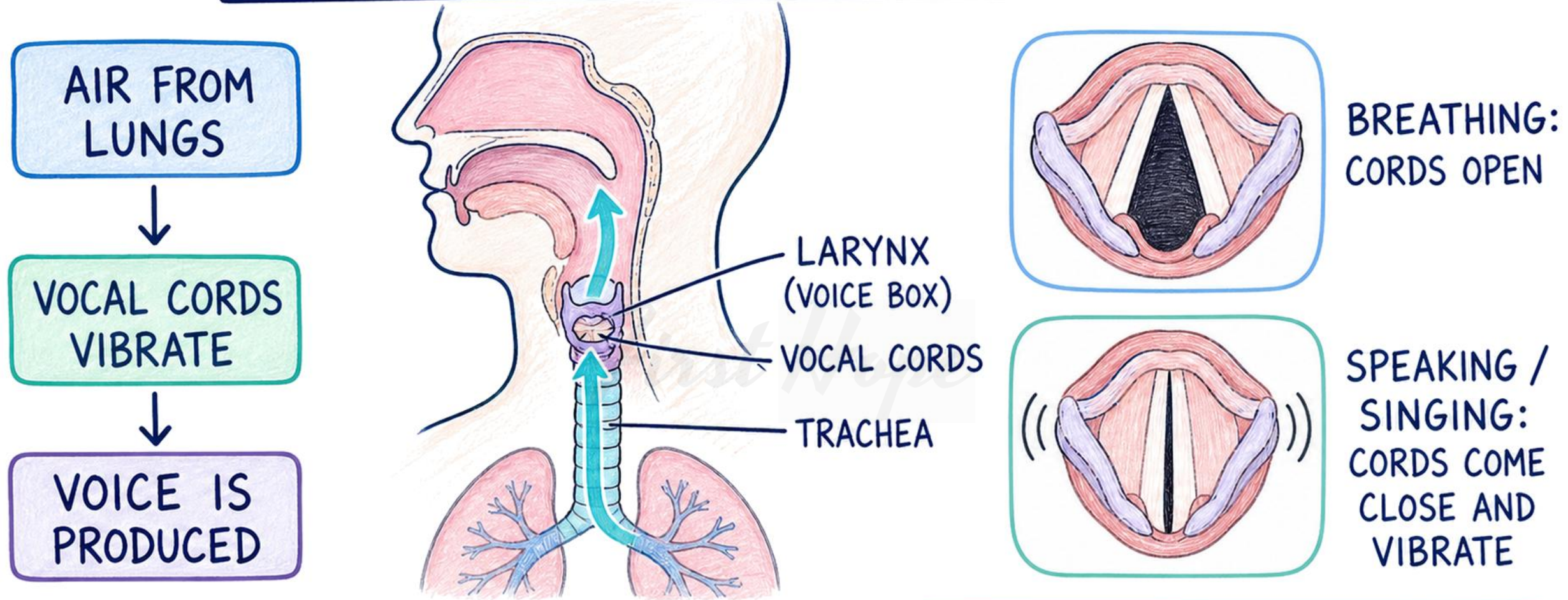
Changing the tension changes the sound.

WHAT CAN VIBRATE?



The vibrating object is the SOURCE of sound.

HOW HUMANS PRODUCE VOICE



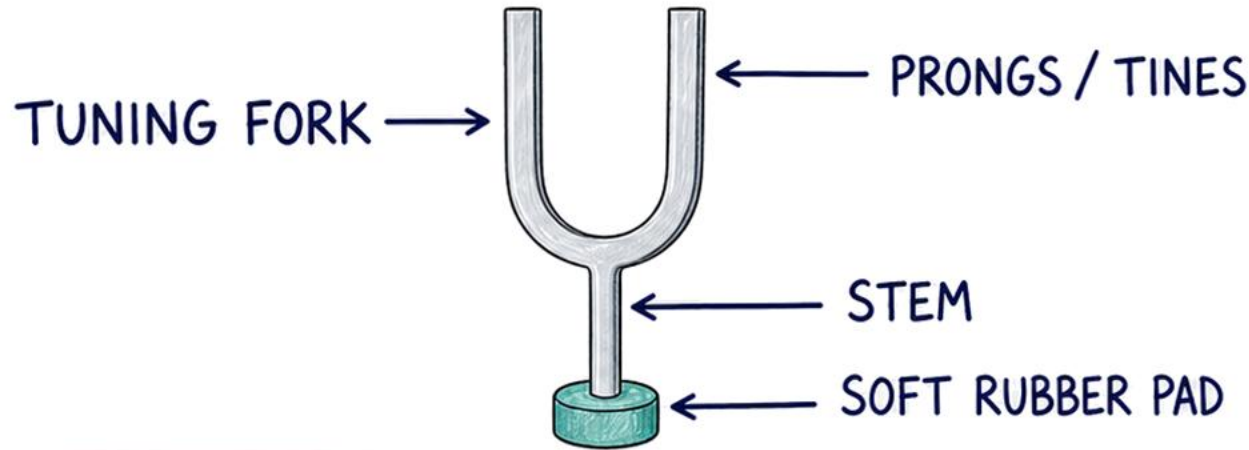
Tongue + lips + mouth + nasal cavity shape the sound into speech or song.



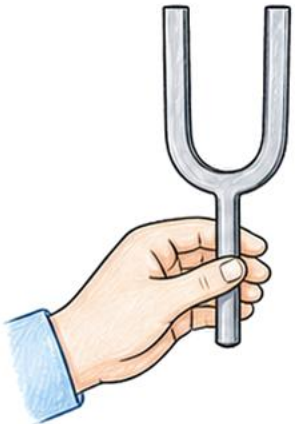
OTHER ANIMALS

Crickets and grasshoppers rub wings or legs to make sound.

TUNING FORK: VIBRATION YOU CAN SEE



1. HOLD THE STEM



2. STRIKE A PRONG GENTLY ON THE SOFT PAD



3. BRING IT NEAR THE EAR → SOUND



4. TOUCH WATER LIGHTLY → RIPPLES / SPLASHES



The ripples show that the prongs are vibrating.
VIBRATION PRODUCES SOUND.



Never strike a hard surface
or put the fork inside the ear.

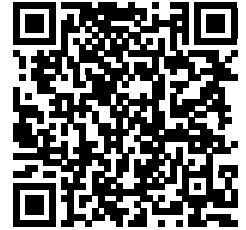


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