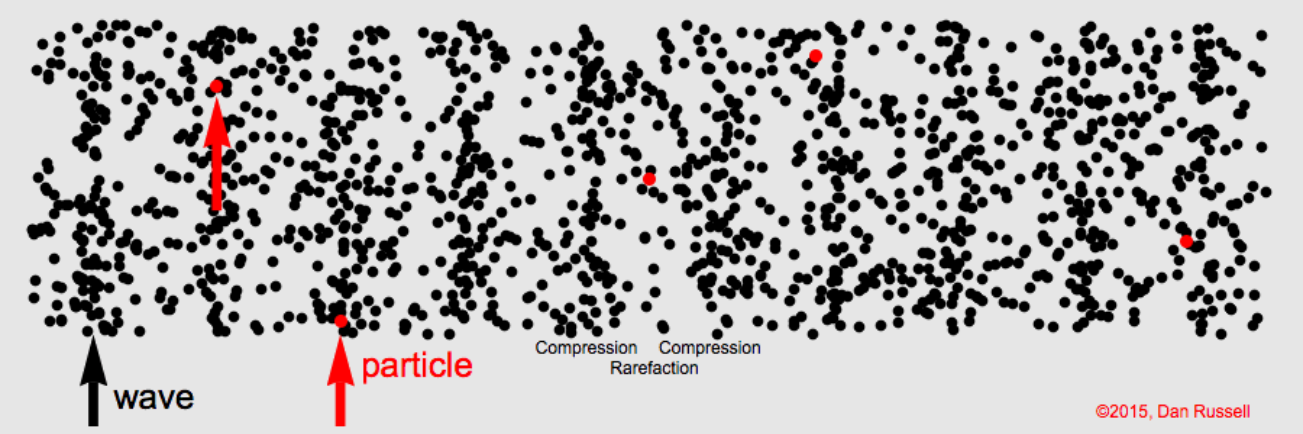
Sound and Standing Waves

IB PHYSICS | WAVES - SOUND

Sound Waves start as Vibrations

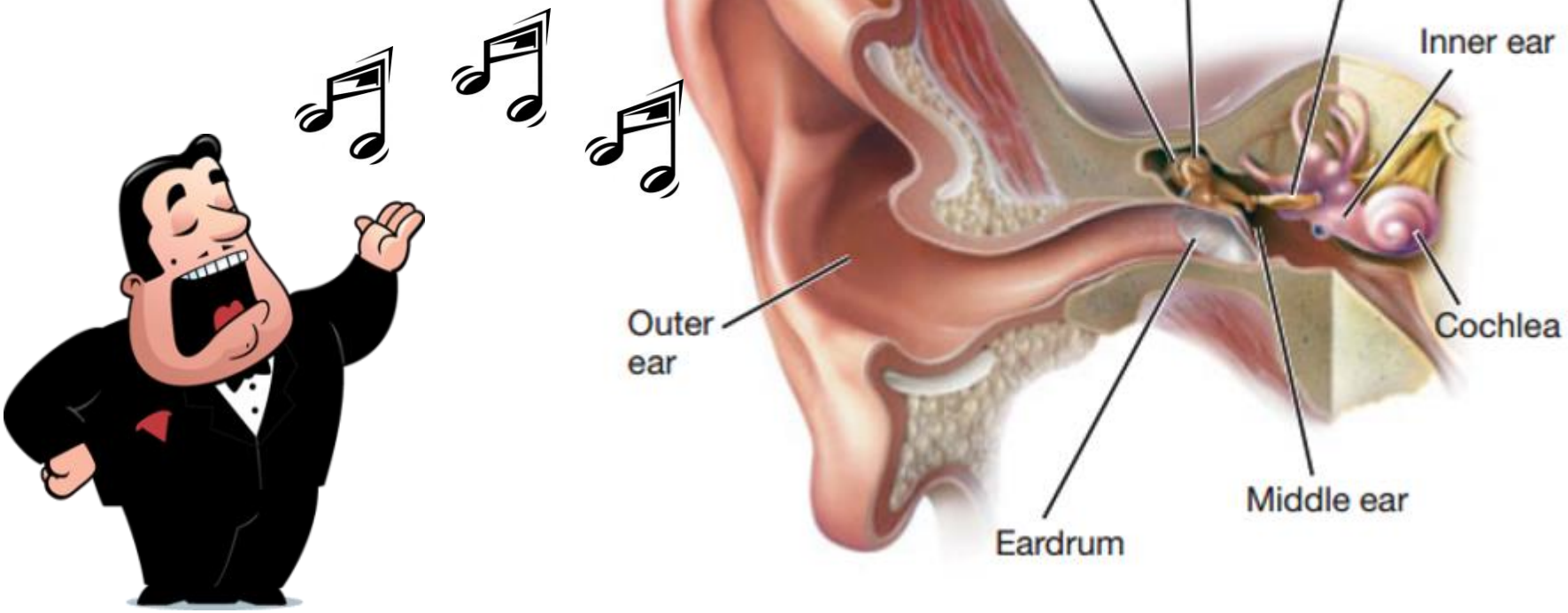


What kind of wave is sound?

Longitudinal

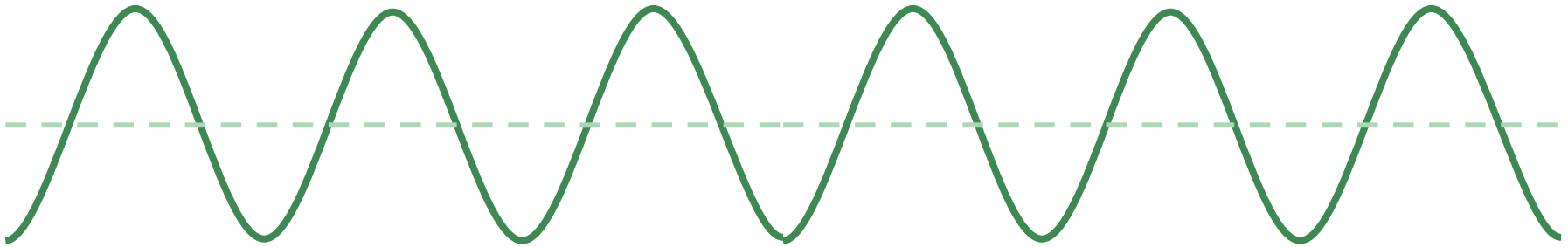
Sound is Pressure

Vibrations pressurize the air molecules and those pressure waves cause our ears to vibrate too!

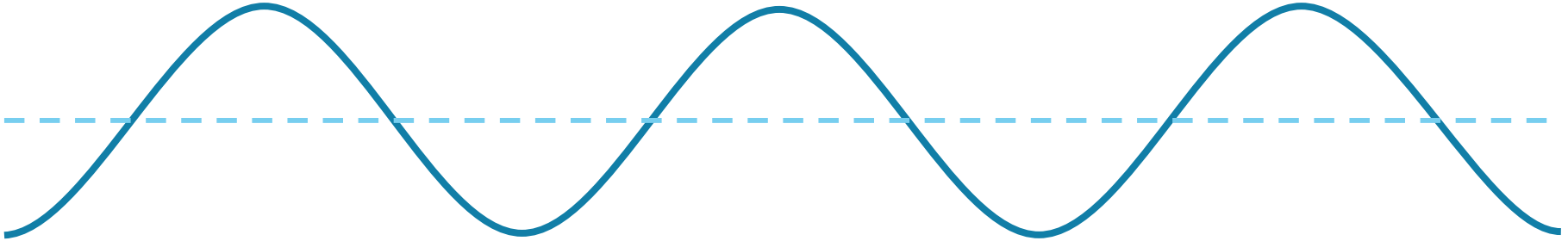


Pitch is Related to Frequency

High pitched sounds have **high** frequencies



Low pitched sounds have **low** frequencies

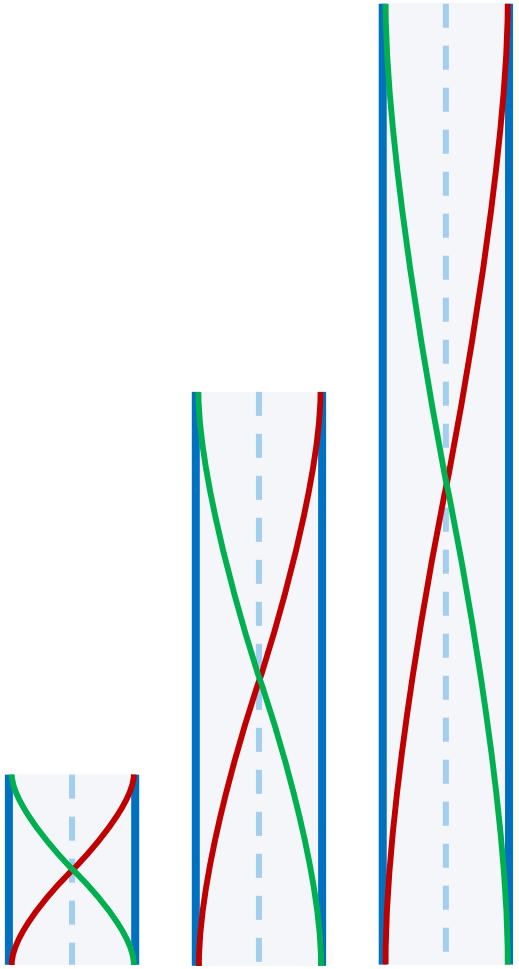


Sensing Pitch

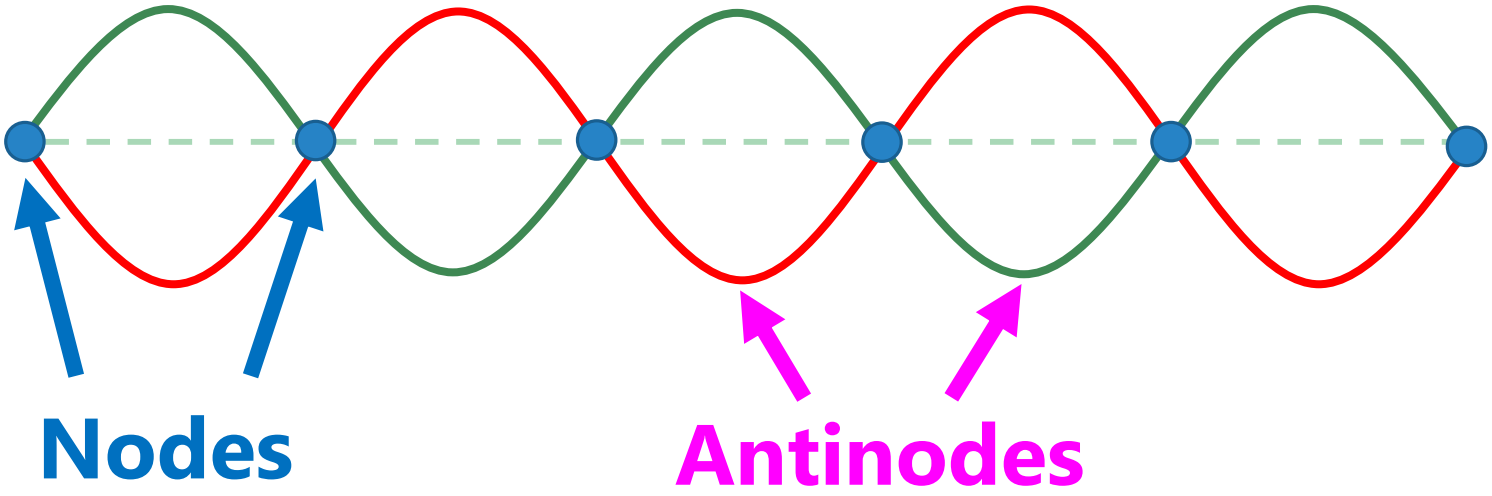
Sadly, the range of frequencies that we can hear diminishes with age…

Frequency
8,000 Hz
10,000 Hz
12,000 Hz
14,000 Hz
16,000 Hz
18,000 Hz
20,000 Hz

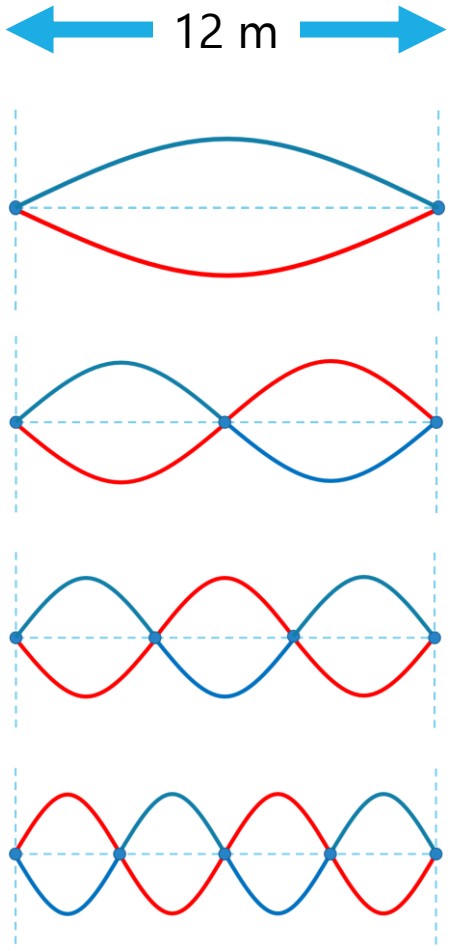
What do you notice from the video?



Standing Waves

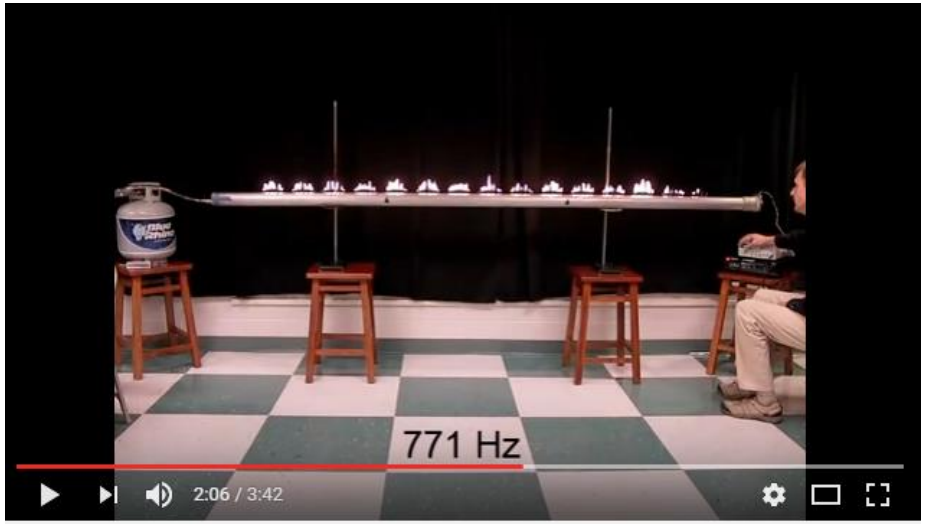


Standing Waves

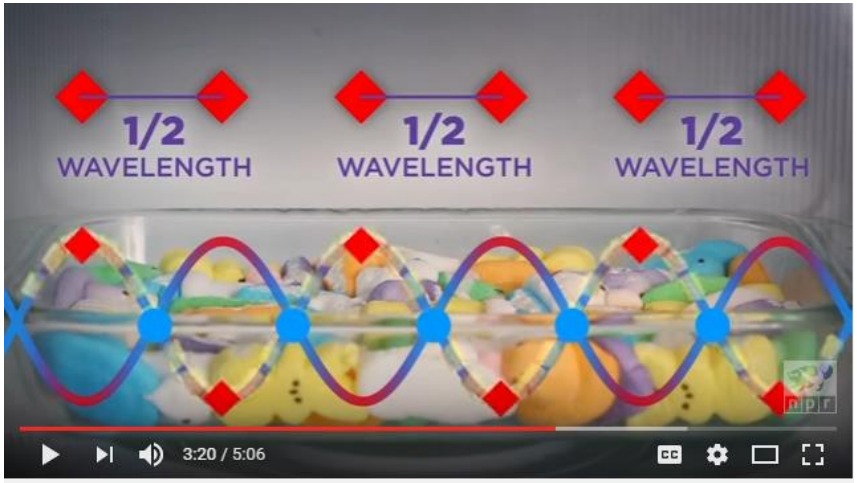


# of Standing Waves	# of Wavelengths	Wavelength (m)
1	0.5	24
2	1	12
3	1.5	8
4	2	6

“Seeing” Standing Waves



The Rubens' Flame Tube: Seeing Sound Through Fire



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Lesson Takeaways

- ❑ I can relate the pitch of a sound to the frequency of the sound wave
- ❑ I can identify and label the node and antinodes on a standing wave diagram