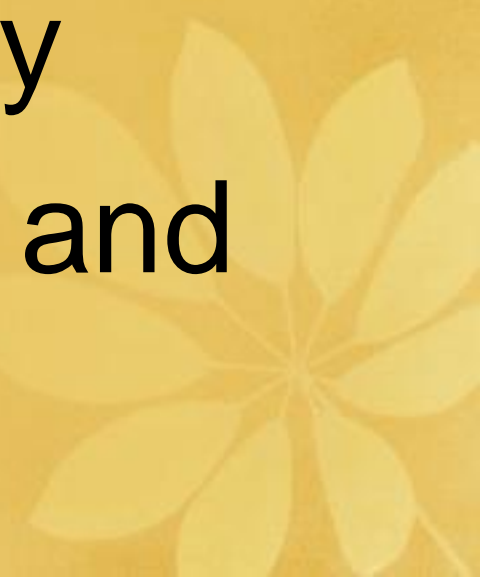




Sound



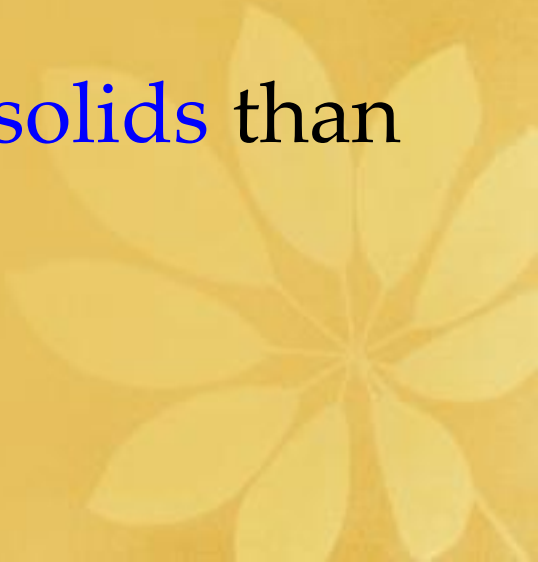
Overview

- The Facts of Sound
 - The Ear and Sound
 - Sound Vocabulary
 - Musical Instruments and Sound
- 



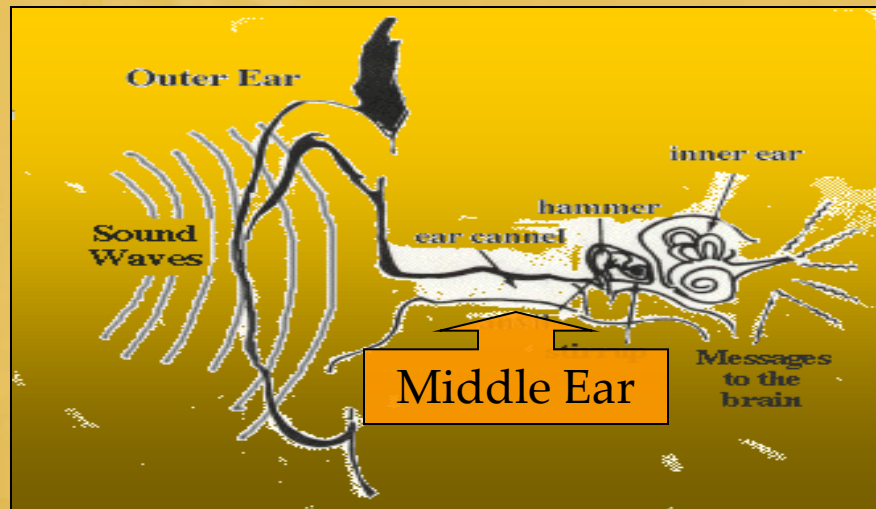
The Facts

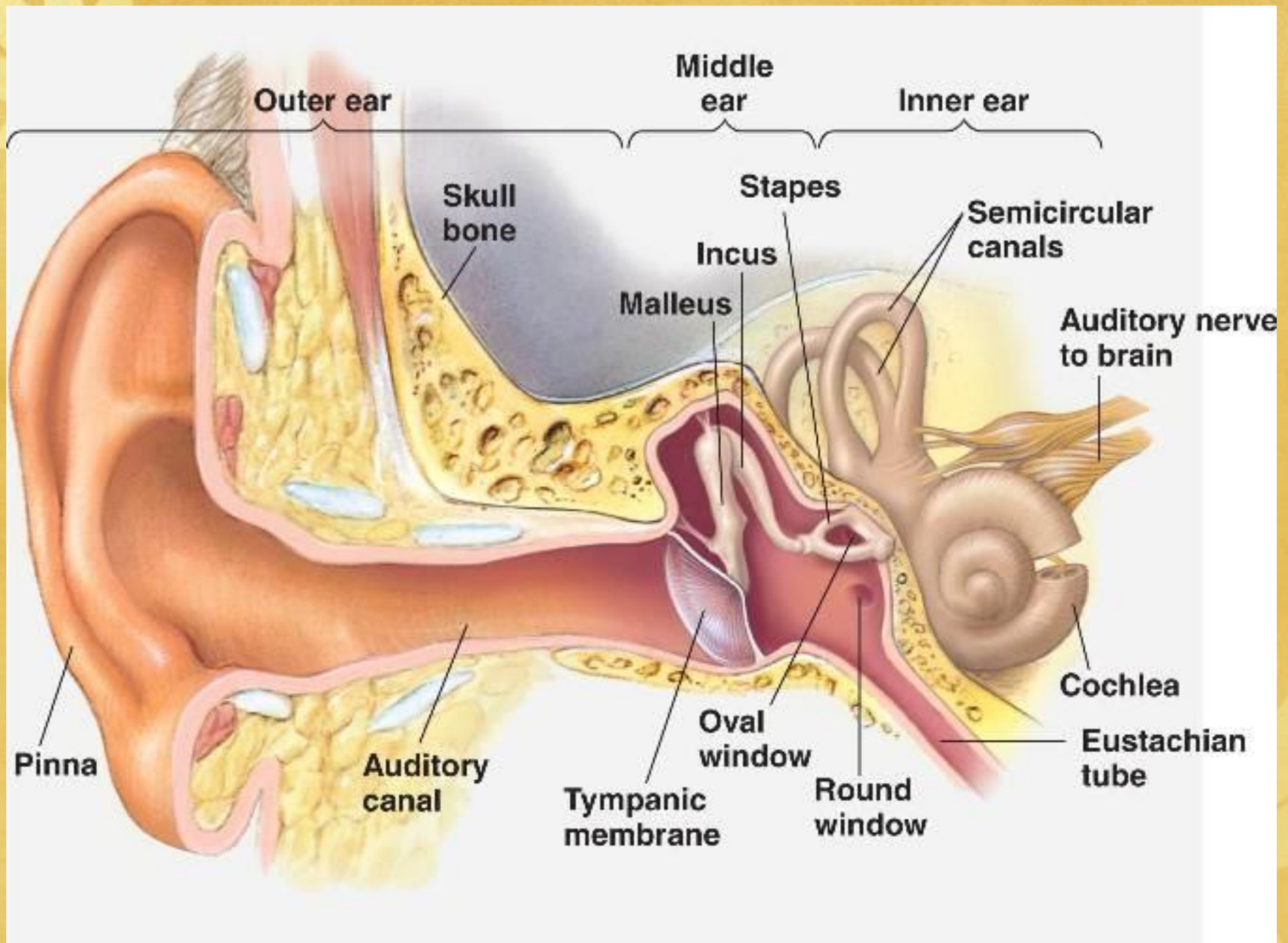
Sound ...

1. Is a form of energy produced & transmitted by **vibrating matter**
 2. **Travels in waves**
 3. **Travels** more **quickly** through solids than liquids or gases
- 

The Ear

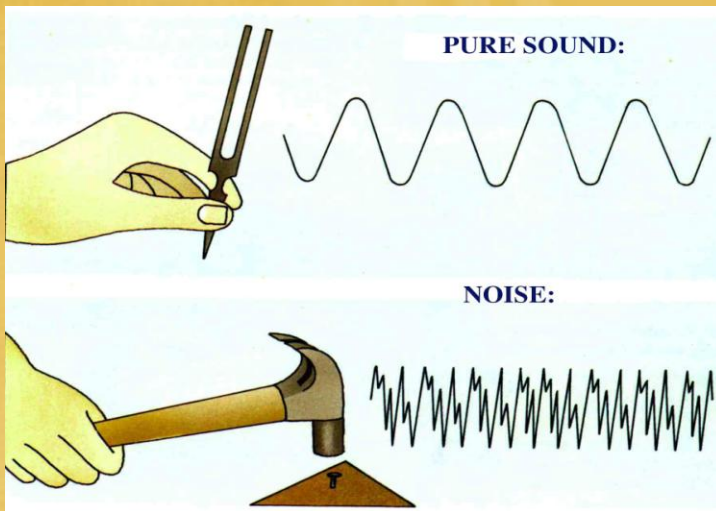
- Sound is carried to our ears through vibrating air molecules.
- Our ears take in sound waves & turn them into signals that go to our brains.
- Sound waves move through 3 parts of the ear; outer ear, middle ear, & inner ear.





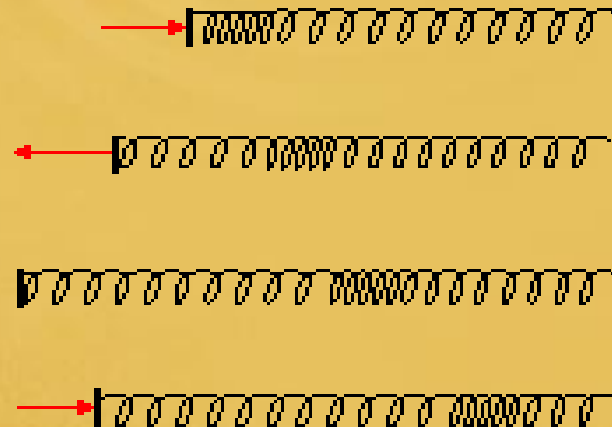
Vibration

- Back and forth movement of molecules of matter
- For example,

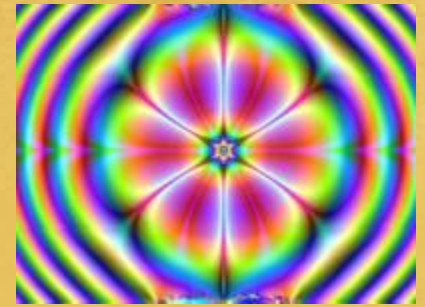


Compression

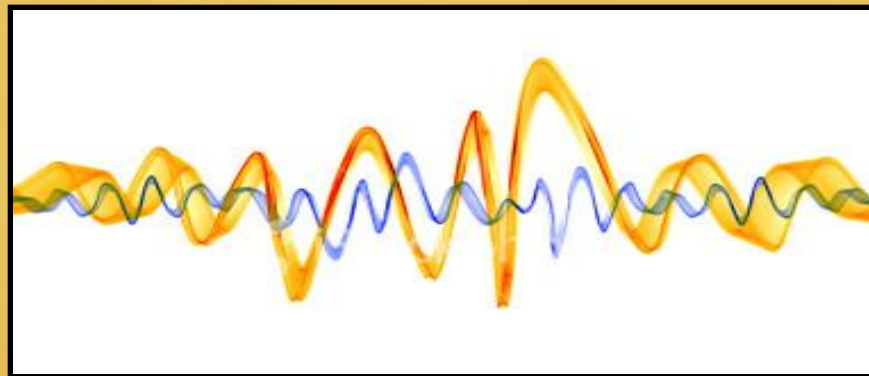
- Where **molecules are being pressed together** as the sound waves move through matter
- **For example,**
 - a wave travels through the springs just like sound waves travel through the air
 - the places where the springs are close together are like compressions in the air.



Sound Waves

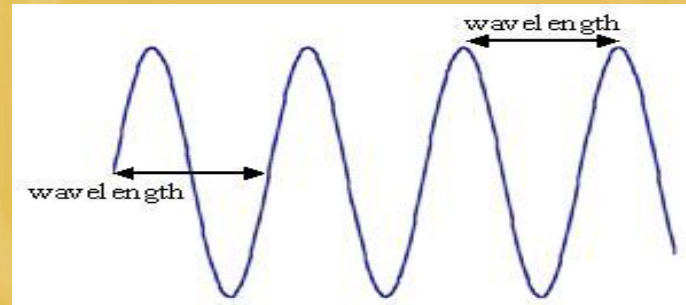


- Alternating areas of high & low pressure in the air
- ALL sound is carried through matter as sound waves
- Sound waves **move out in ALL directions** from a vibrating object

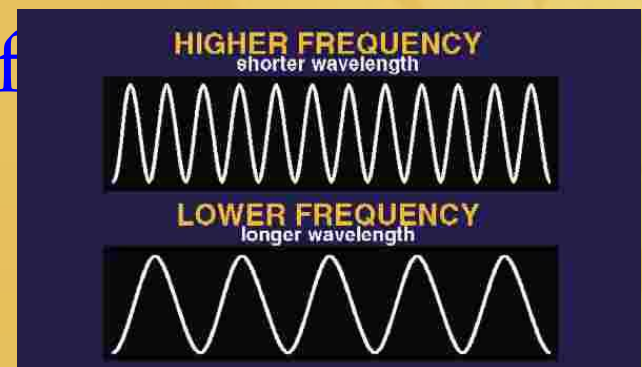


Wavelength & Frequency

- Wavelength is the distance between one part of a wave and the same part of the next wave



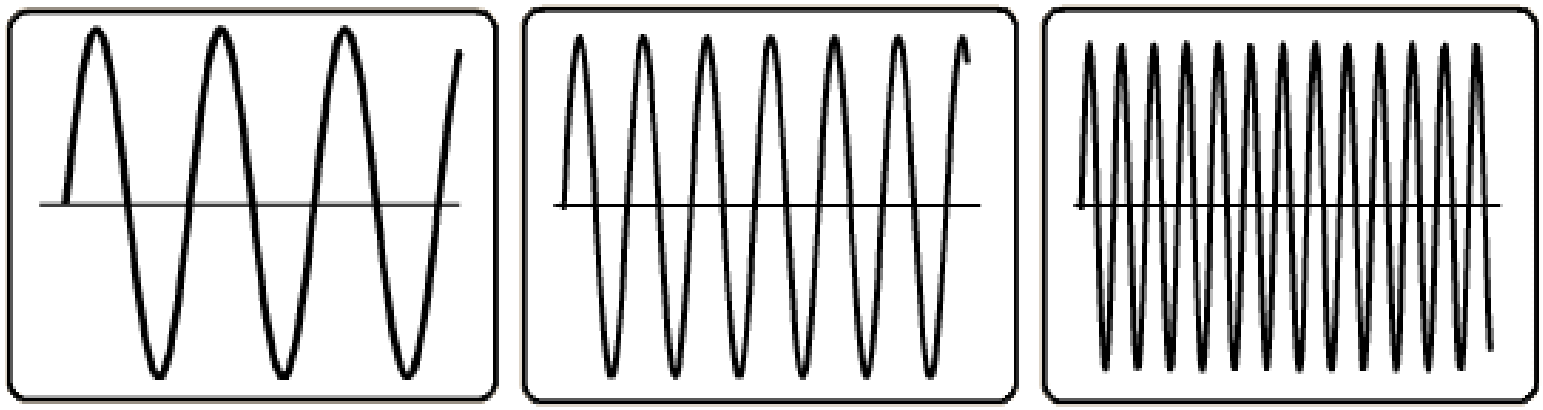
- Frequency is the number of past a point in one second



Pitch



- A measure of **how high or low a sound is**
- Pitch **depends on the frequency** of a sound wave
- **For example,**



- Low pitch

- Low frequency

- Longer wavelength

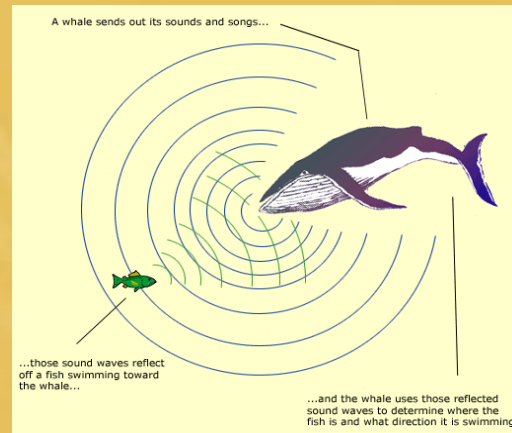
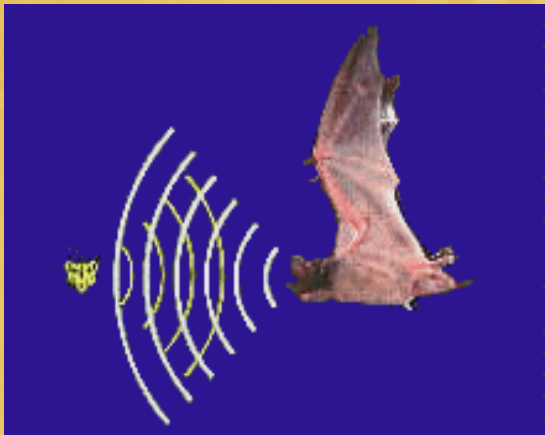
- High pitch

- High frequency

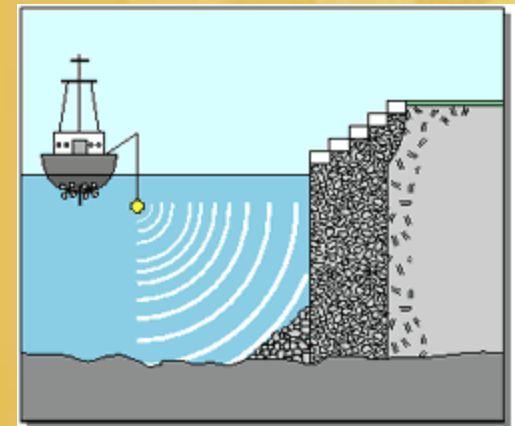
- Shorter wavelength

Sonar

- An instrument that uses **reflected sound waves** to find underwater objects
- For example,



Humans use sonar to locate or map objects



Animals use sonar or echo location to find their prey; these sounds have such a high pitch or frequency that the human ear cannot hear

Sound and Instruments

- Instruments can be played at different pitches by **changing lengths of different parts.**
- **For example,**
- Another way to make different pitches is to **change the thickness of the material that vibrates.**
- **For example,**



A trombone's mute absorbs some of the sound waves produced, thus producing a softer note when played.



That's all folks!

