

Assignment: 4

Name: PILARZ

Hour: 1st

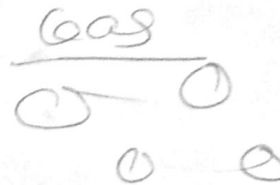
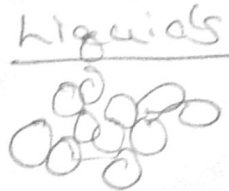
Sound Waves

Sound is an example of a longitudinal wave.

- Longitudinal waves are mechanical waves
 - o Mechanical waves require a medium to pass through
 - o Therefore sound does NOT travel through empty space

Sound results from the back and forth vibration of particles of the medium through which the sound wave is moving

- Because sound requires particles to pass its energy, the closer particles are the faster they will be able to touch to transfer the energy
 - o The state of matter with the closest molecules is a solid, therefore sound travels fastest through solids
 - o The state of matter with the furthest apart molecules is gas, therefore sound travels slowest through gas



Human Voice

- Uses vocal chords that vibrate to produce sound

What can humans hear?

- Humans can hear noises just above 0 decibels up to 160 decibels
- Noise pollution that is above 120 decibels can result in pain or hearing loss, however anything above 80 decibels can start to cause damage to your ear
- If you want to reduce the amount of sound transmitted you need to use a material that absorb sound

- o What examples of these do we have in the PAC or band/choir rooms?
 - felt/fabric will absorb sound, curtains
 - padding on wall
 - shell

What causes sound to change pitch?

Pitch: the frequency of wave

- The shorter the wavelengths, the more waves in a given time, the higher the pitch
- The longer the wavelengths, the fewer waves in a given time, the lower the pitch

Think of musical instruments like the violin...

- How do you tune a violin? make it tighter or looser
- What is unique about the different strings? get thicker
- What happens to the strings as you move your fingers along them? they get shorter

So pitch is changed by adjusting the frequency of waves

- o To change the frequency of waves, you need to change the wavelength, material (thickness) the wave is traveling through or the tightness of the material
- As the length of the vibrating string increases the pitch decreases OR as the length of the string decreases the pitch is increase

What else do we use sound for?

- Dolphins use sound for echolocation to locate prey