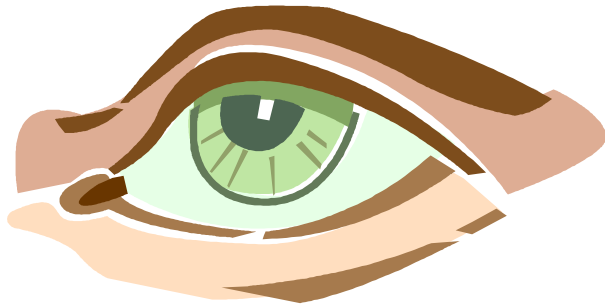


Light and Sound

Notes



How Materials Transmit Light

- Transparent – allows most light to pass through
- Translucent – transmit some light, but also cause it to spread in all directions. You see light through the object, but can not see objects clearly.
- Opaque – no light is allowed to pass through because they reflect or absorb light.

Scattering

- Spreading out of light rays in all directions, because particles reflect and absorb the light.
 - Fog or dust in the air, mud in water, smudges on glass.



- Scattering makes the sky blue during the day because our atmosphere scatters blue more than the other colors. What color is present in the morning and evening?

Sound



- Sound is a type of mechanical wave.
- Vibrations are required to start a sound wave.
 - Your vocal chords

Sound can not travel in a vacuum. *Sound is compressional, which means it must have a medium.*

The Speed of Sound Depends on it's Medium.

- Sound can travel through a solid, liquid and gas.
- Sound travels fastest through a solid because of refraction. The molecules are closer together, so it bounces faster. Think about a pinball machine.

Does Temperature Effect Sound?

- YES!!!!!!
- The higher the temperature, the faster sound will move.
- On a hot day, you will hear people clearer than on a cold day.

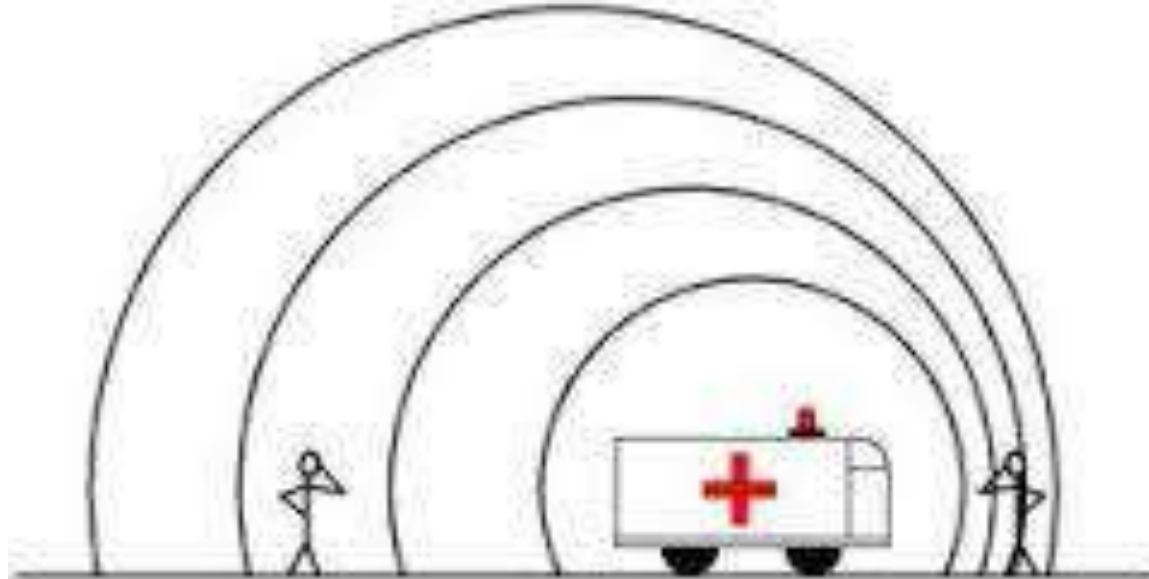
Frequency Determines Pitch

- Pitch is the highness or lowness of a sound.
- The faster the vibration, the higher the sound.
- The highest frequency humans can hear is 20,000 hertz.
- The lowest is around 20 hertz.



Doppler Effect

- Is the change in perceived pitch that occurs when the source of the sound is moving.
- <https://www.youtube.com/watch?v=WCEhidp8tiA>



Doppler Effect

- <https://www.youtube.com/watch?v=0rJPvGML9A0>

Amplitude Effects Loudness

- If you increase the amplitude of a wave, the sound will become louder.
- The opposite is also true. If you decrease the amplitude of a wave, the sound will become softer.



Think of frequency as pitch and
amplitude as volume.

- <https://www.youtube.com/watch?v=YTZcSaPn92s>