SOUND AND LIGHT ENERGY

What Is Sound?

Sound is a type of energy that travels in waves which are caused by vibrations.

How Does Sound Travel?

Sound needs something in which to travel. Sound can travel through solids, liquids, and gases. Sound travels through solids the fastest.

Characteristics of Sound

- **Vibrations:** movements made rapidly back and forth.
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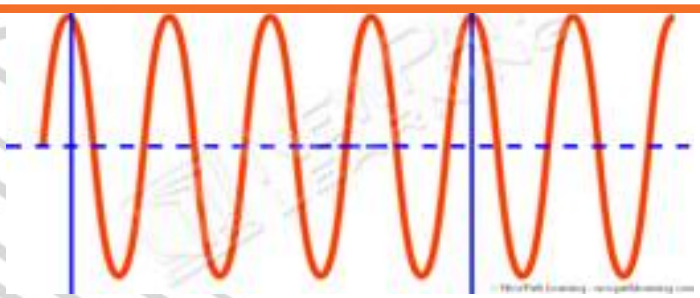
- **Wav** nd wave and



- **Pitch and Loudness:** the highness or lowness of a sound.
- **Frequency:** The number of vibrations in a period of time is called the **frequency** of a vibration. The faster the vibration, the higher the frequency. Frequency is measured in Hertz (Hz).
- **Volume:** The loudness or quietness of a sound is its **volume.** The loudness of a sound can be measured in units called **decibels.**

Measurement Examples of Various Sounds

- a whisper = 10 decibels
- normal conversation = 60 decibels
- a train = 100 decibels
- rock concert = 110-140 decibels

- **Reflection and Absorption:** Reflection is when sound bounces off an object. An echo is a reflected sound. **Absorption** is when sound is taken in by an object.

What is Light?

Light is a form of energy that travels in waves.

Reflection, Absorption, and Refraction

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- **Absorp**
- **Refrac**
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Light an

We can only see only the wavelengths and frequencies of the colors in the visible spectrum which include red, orange, yellow, green, blue, and violet. On the visible spectrum, as you move from the colors on the right to the colors on the left, wavelength decreases and frequency increases.

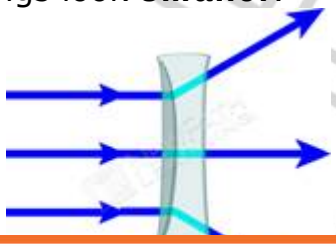
Visible Spectrum

Invisible Waves

Most waves in the **electromagnetic spectrum** are invisible to our eyes. Xrays and waves in your microwave that cook your food are examples of electromagnetic waves.

What is a concave lens?

A **concave lens** is **thinner in the middle** than on its edges. We use a concave lens to make things look **smaller**.



What is a

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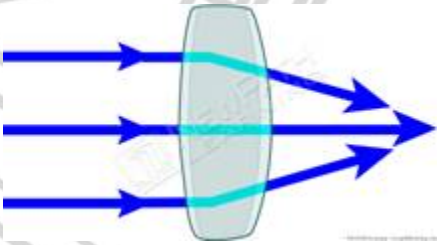

Transparent, Translucent and Opaque Materials

A **transparent** material allows light to pass through clearly without any effects, such as a window.
A **translucent** material allows light to pass through it, but it is not clear. Wax paper is translucent.
An **opaque** material does not allow any light to pass through at all, such as a brick wall.