

Catch A Wave!



Wave Properties

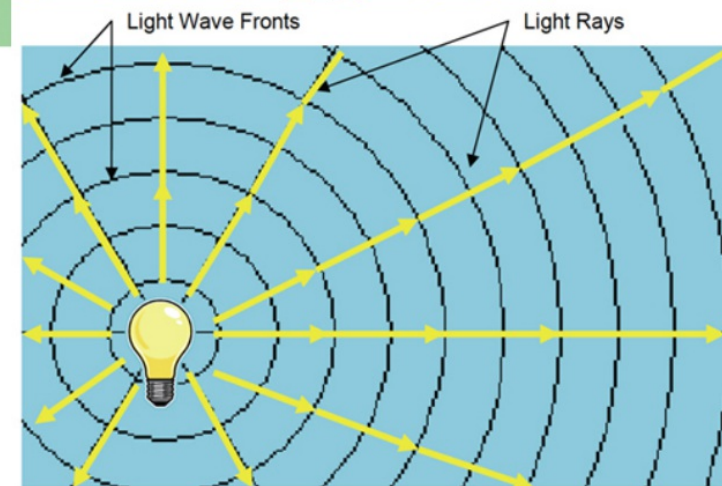
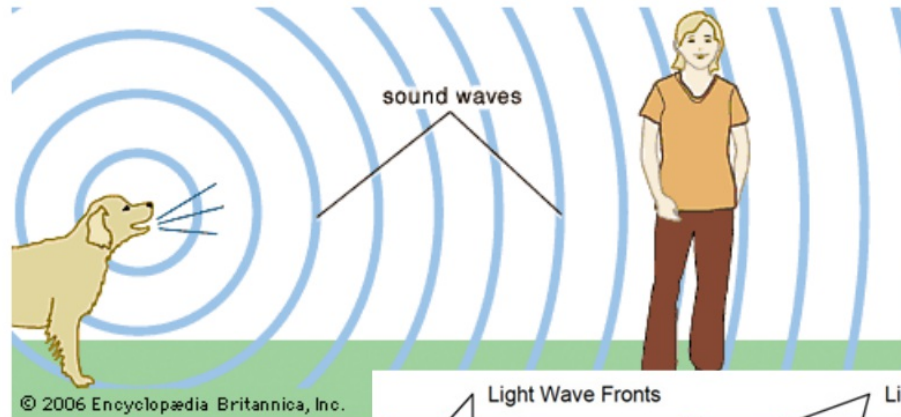
What is a wave?

1. Energy is transferred through a wave.

Wave (motion) = A disturbance that carries energy.

2. Wave motion begins with some force or source and creates a vibration.

Energy: the ability or capacity to do work. Scientifically, work is done when something, regardless of size, moves. Therefore, energy is needed to cause motion.



3. Medium: Any substance that a wave travels through. Speed of wave depends on the properties of the medium.

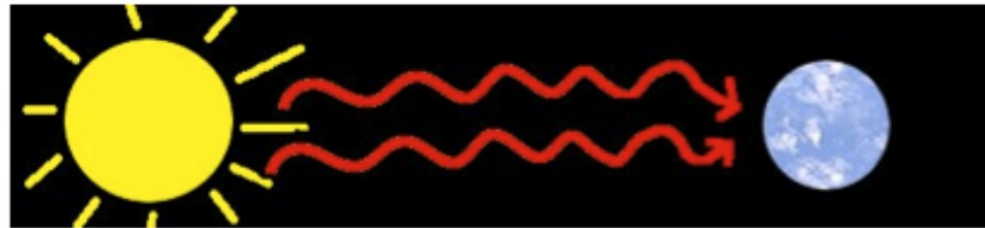


4. Two Classes of Waves:

5. Mechanical (physical) waves- travel through a medium.

6. Electromagnetic waves- do not need a medium to travel.

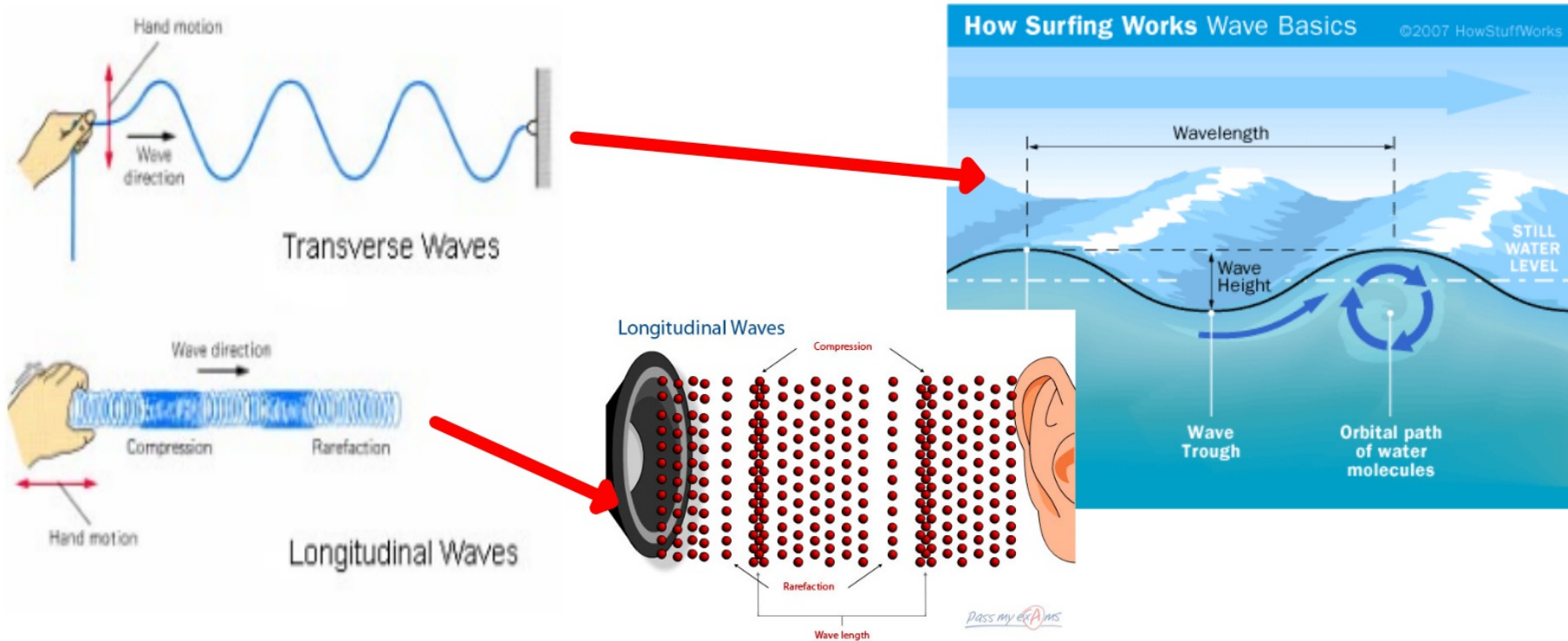
*Can you think of examples of each?
Which one does this picture represent?*



Seismic waves- type of mechanical wave. Travel through earth.

5. Examples of Mechanical waves:

Transverse (ex. ocean wave) and Longitudinal Waves (ex. Sound)



6. Examples of Electromagnetic waves:

Microwaves, X-rays, visible light

no medium?

Sound waves?

Light waves?

Earthquakes?

Mechanical vs. Electromagnetic Waves

Similarities

Differences

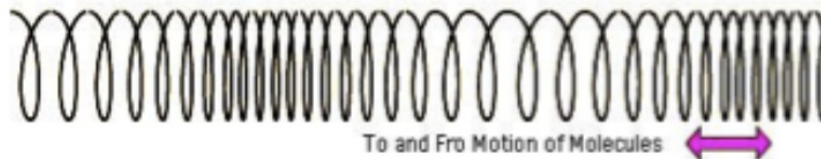
Mechanical Waves

7. Longitudinal Waves

The motion of the medium is *parallel* to the motion of the wave

Back and Forth Waves

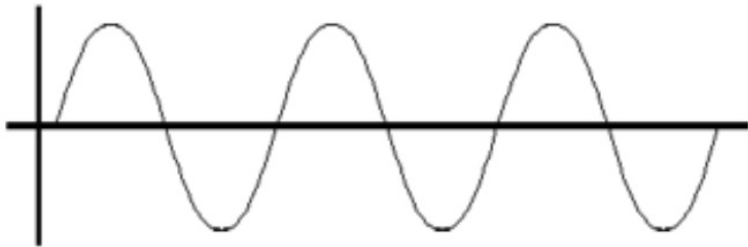
****Sound Waves****



Mechanical Waves

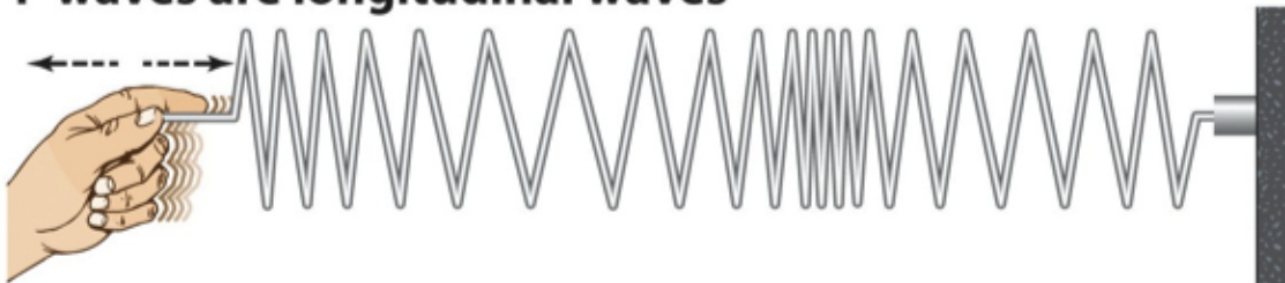
8. Transverse Waves

The motion of the medium is *perpendicular*
to the motion of the wave
Up and Down Waves



Mechanical Waves

P waves are longitudinal waves



S waves are transverse waves



Mechanical Waves

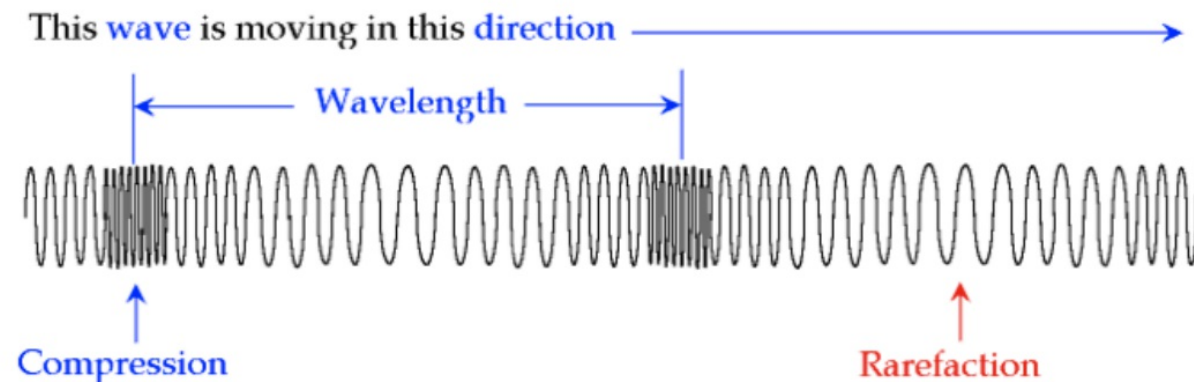
Longitudinal waves

9. Compression

When waves are close together

10. Rarefaction

When waves are far apart



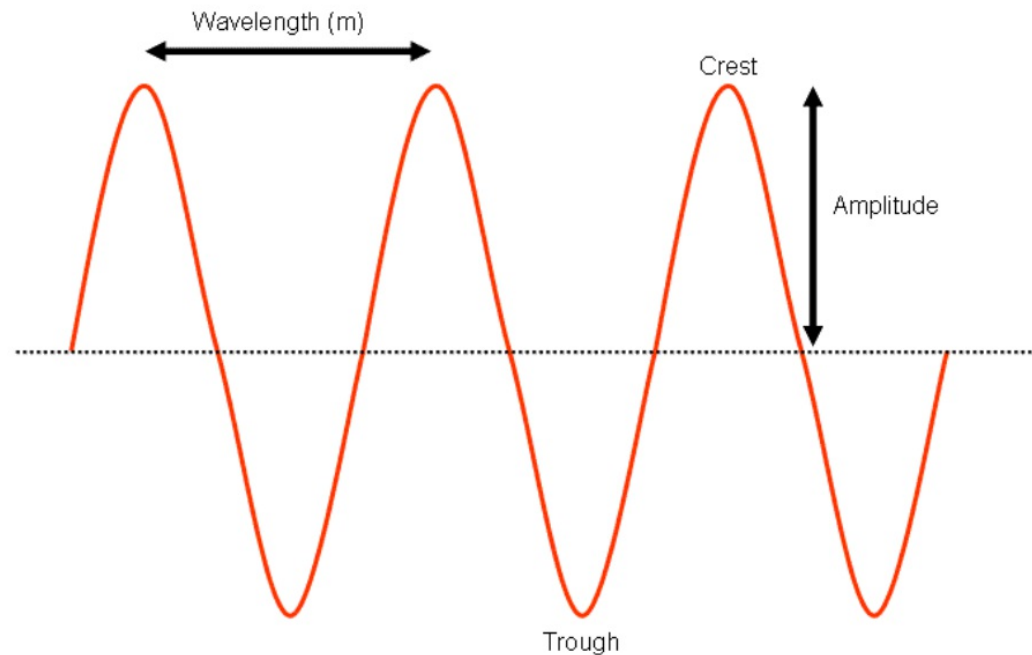
Mechanical Waves

Transverse Wave

11. Crest- highest point on a wave

12. Amplitude- **Volume** of a wave (height of a wave)

As wave height increases, volume increases
Measured in ***Decibels.***



Mechanical Waves

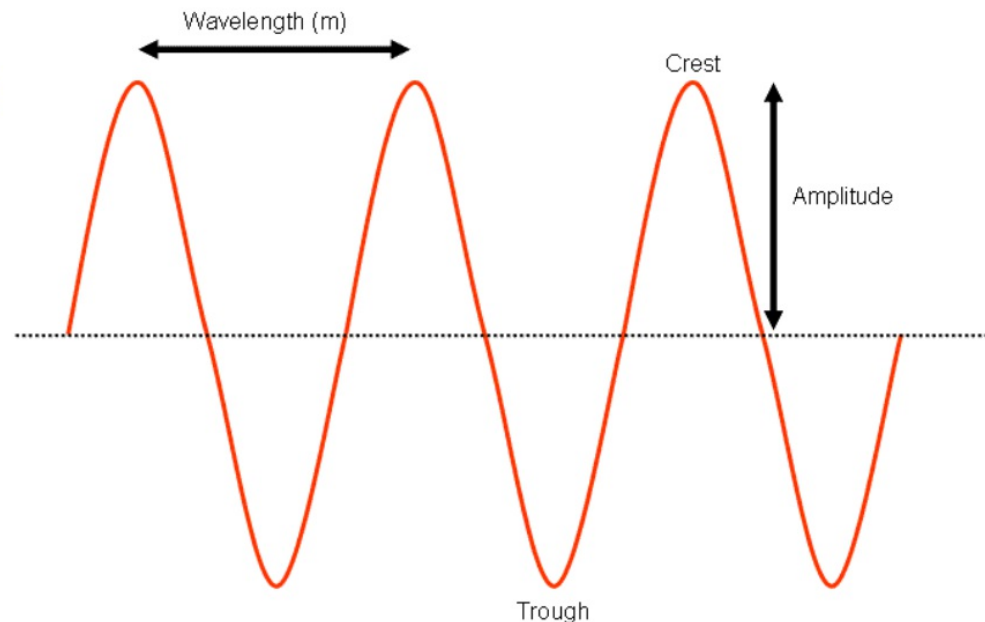
Transverse Wave

13. Trough- lowest point on a wave

14. Frequency- *Pitch*, high or low (length of a wave). As wavelength increases, pitch decreases

Measured in *Hertz*

15. Wavelength-
The distance
between 2 points on
a wave.

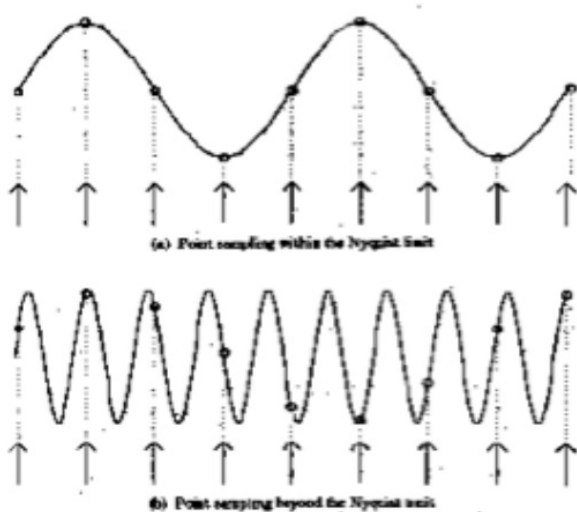
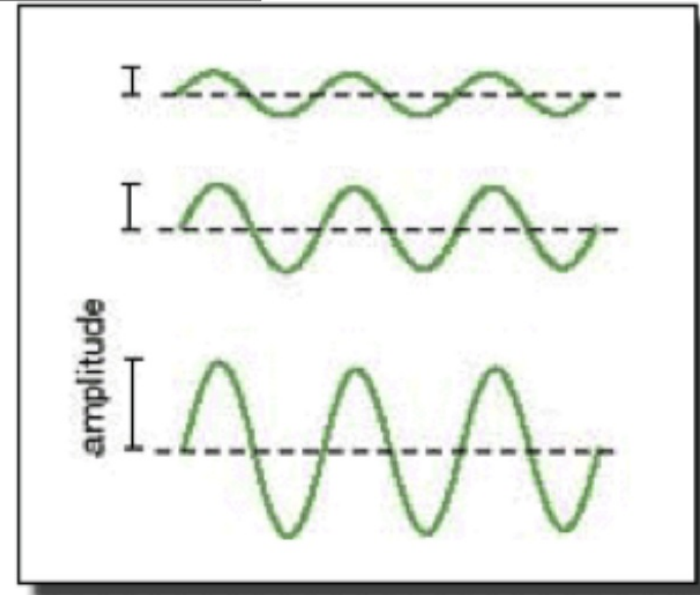


Mechanical Waves

Transverse Wave

Amplitude

Which one will have the higher *volume*?



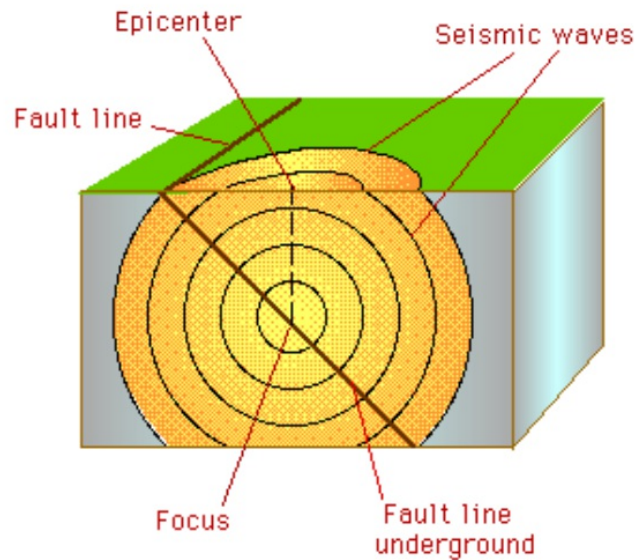
Frequency

Which one will have the higher *pitch*?

Example:

16. Seismic Waves

Earthquake!



Earthquakes

When the break line (the **fault**) between two blocks of rock suddenly moves, the movement causes vibrations (**seismic waves**) to race rapidly outward in all directions from the **focus**.

The point at ground level directly above the focus is called the **epicenter**.

17. Surface Waves



Dont forget about....

Electromagnetic Waves!!

We will discuss more later on in Unit....