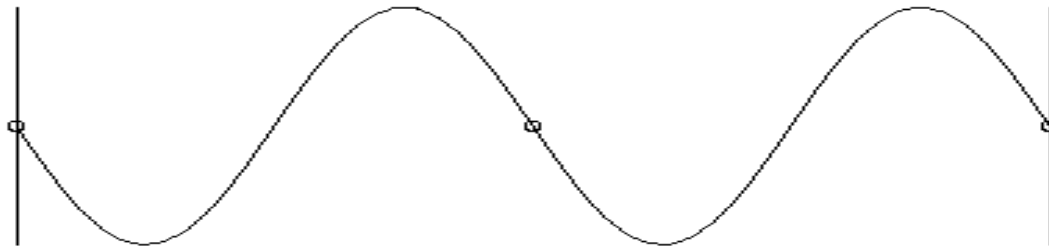


Waves

Structure and Function

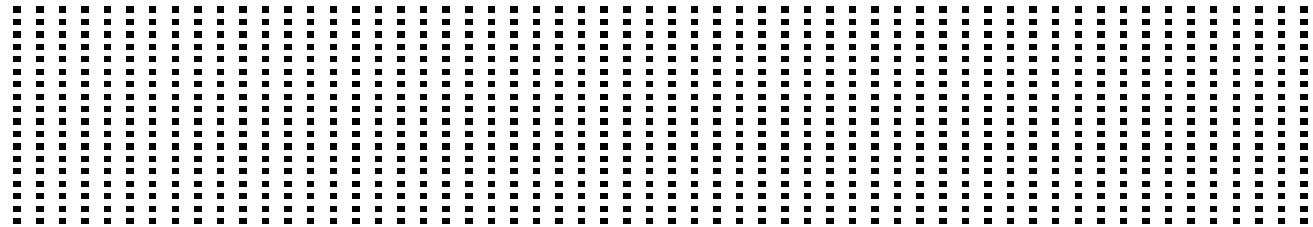
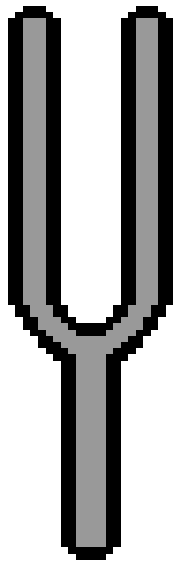
What is a Wave?

- A wave is a disturbance that moves energy through matter or space.
- Waves do NOT move matter; they move energy.



How are Waves Made?

- All waves are created by vibrations.
- Earthquakes send out waves due to the Earth vibrating.
- You are able to speak because your vocal cords vibrate.



Mechanical Waves

1. Mechanical Waves – A wave that can only travel through a medium.
 - Medium – Matter that a wave travels through.



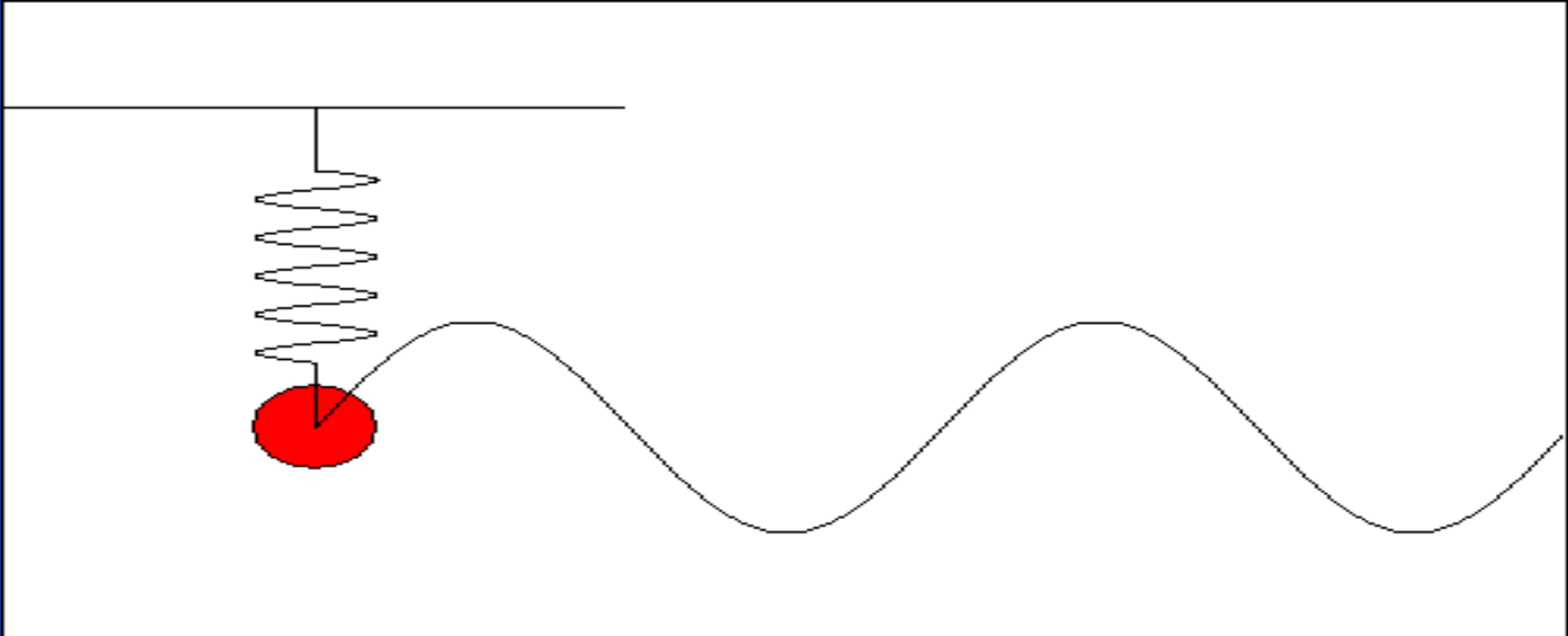
Types of Mechanical Waves

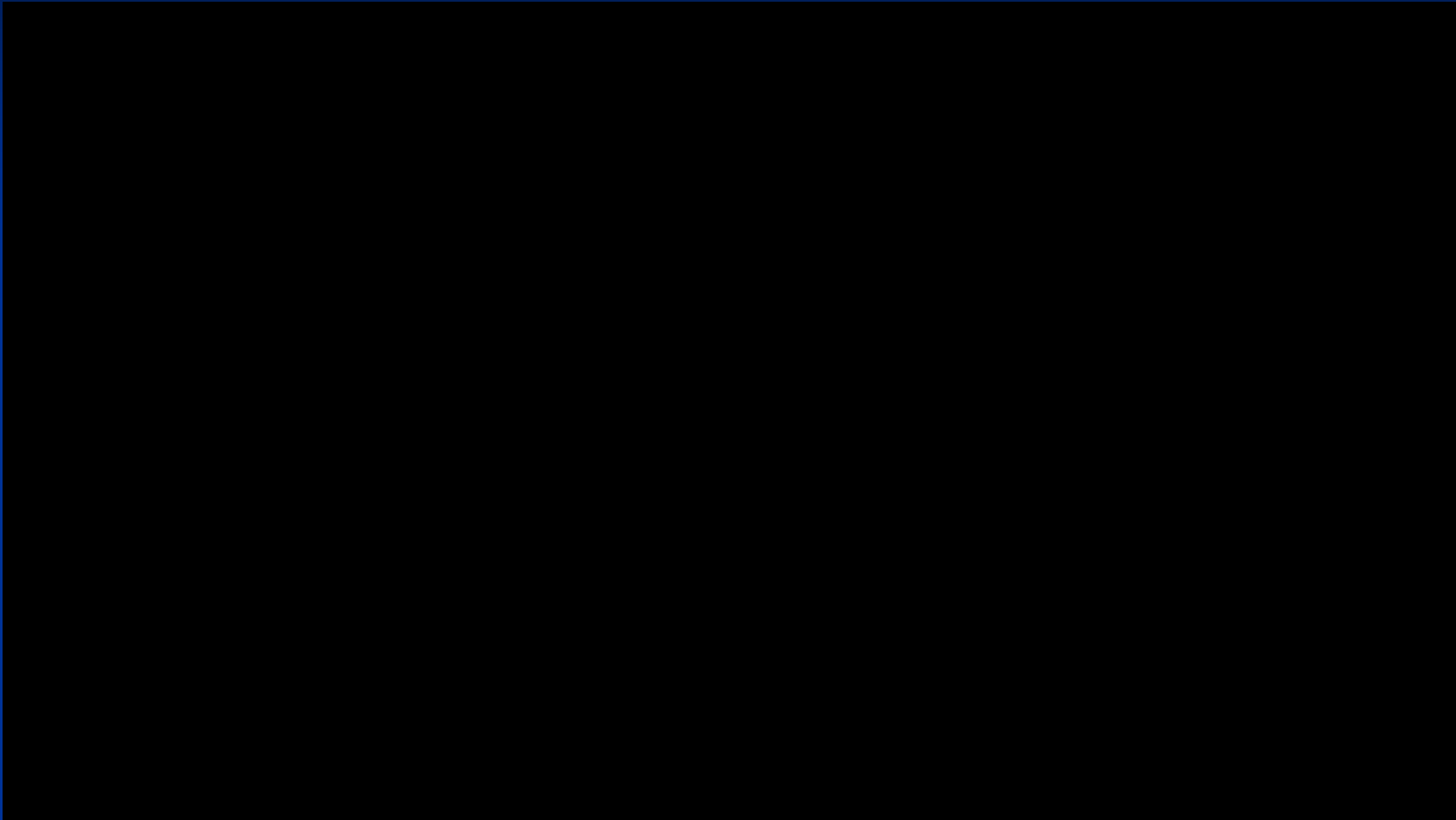
1. Transverse Waves
2. Longitudinal or Compressional Waves



Transverse Waves

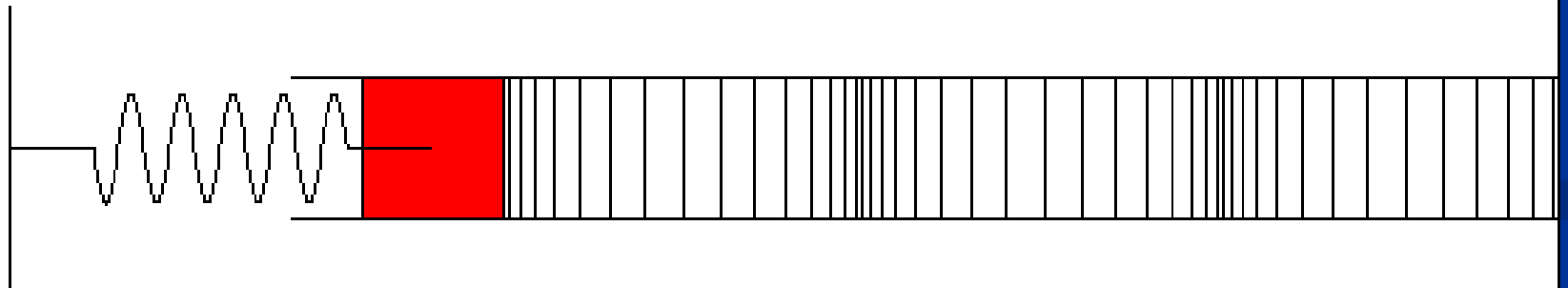
- A wave in which matter moves at a right angle to the direction the energy is traveling.
- Examples
 1. Light
 2. Earthquake

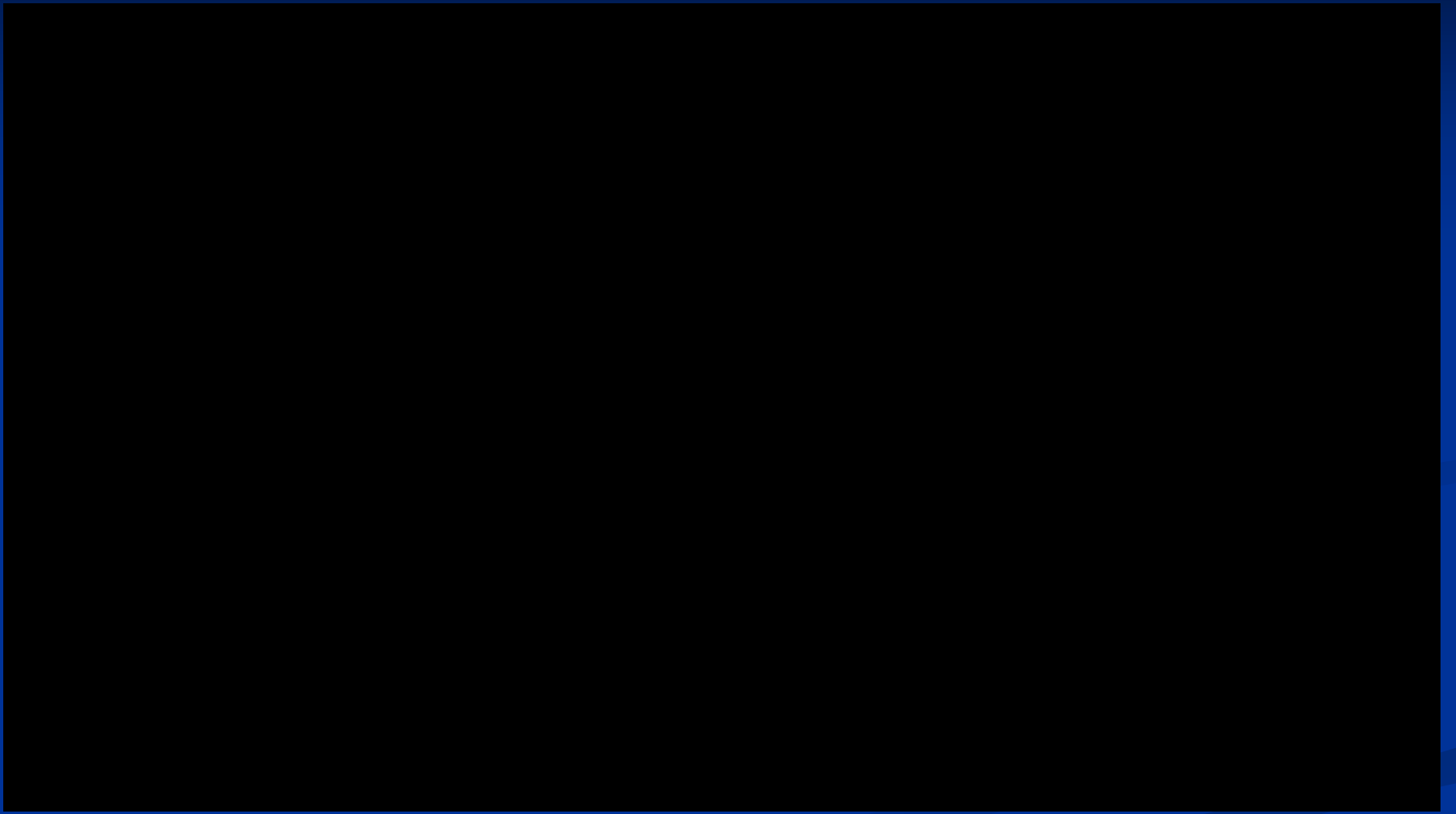




Longitudinal or Compressional Waves

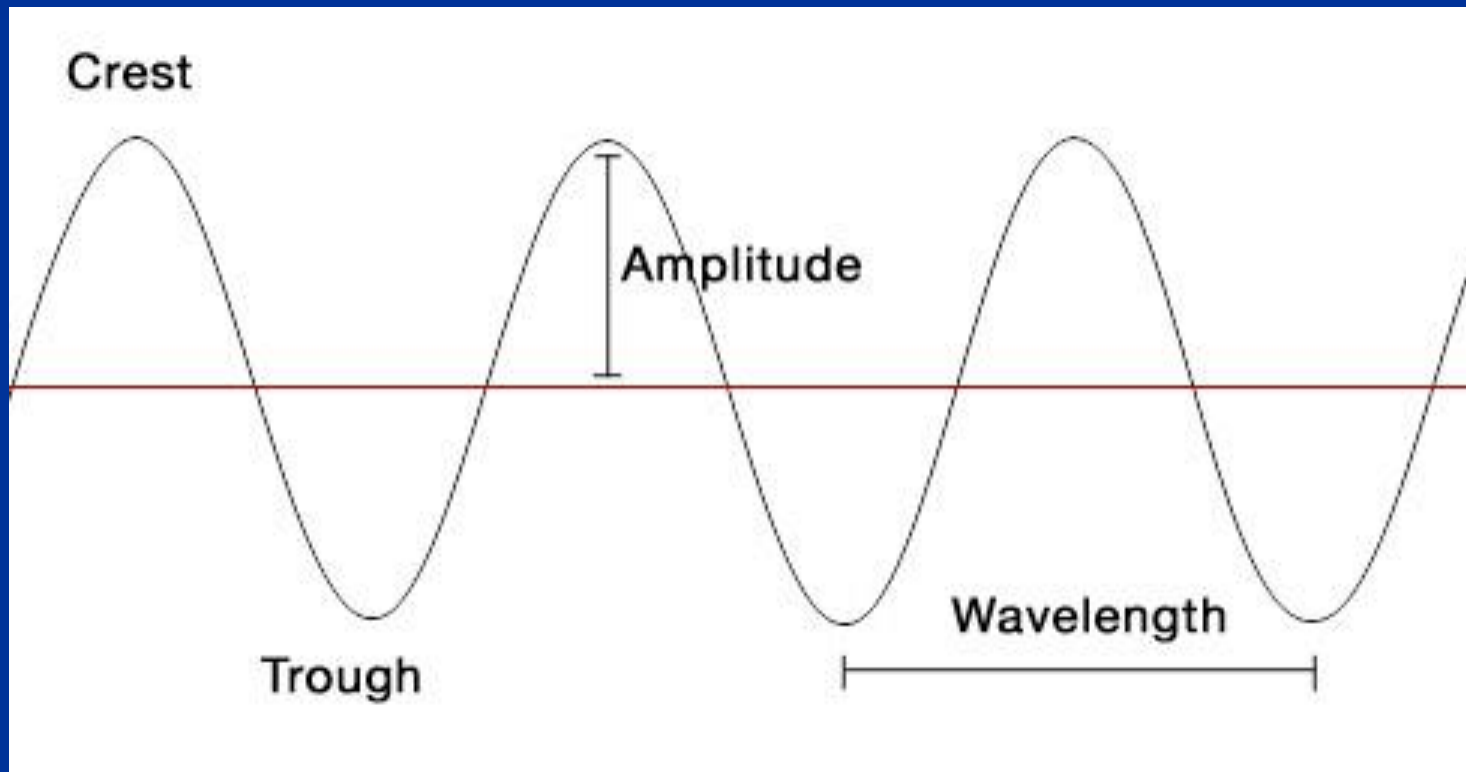
- A wave in which the matter moves parallel to the direction the energy in the wave travels.
- Sound is a longitudinal wave.
- When the matter is spaced out it is called rarification.
- When the matter bunches up it is called compression.





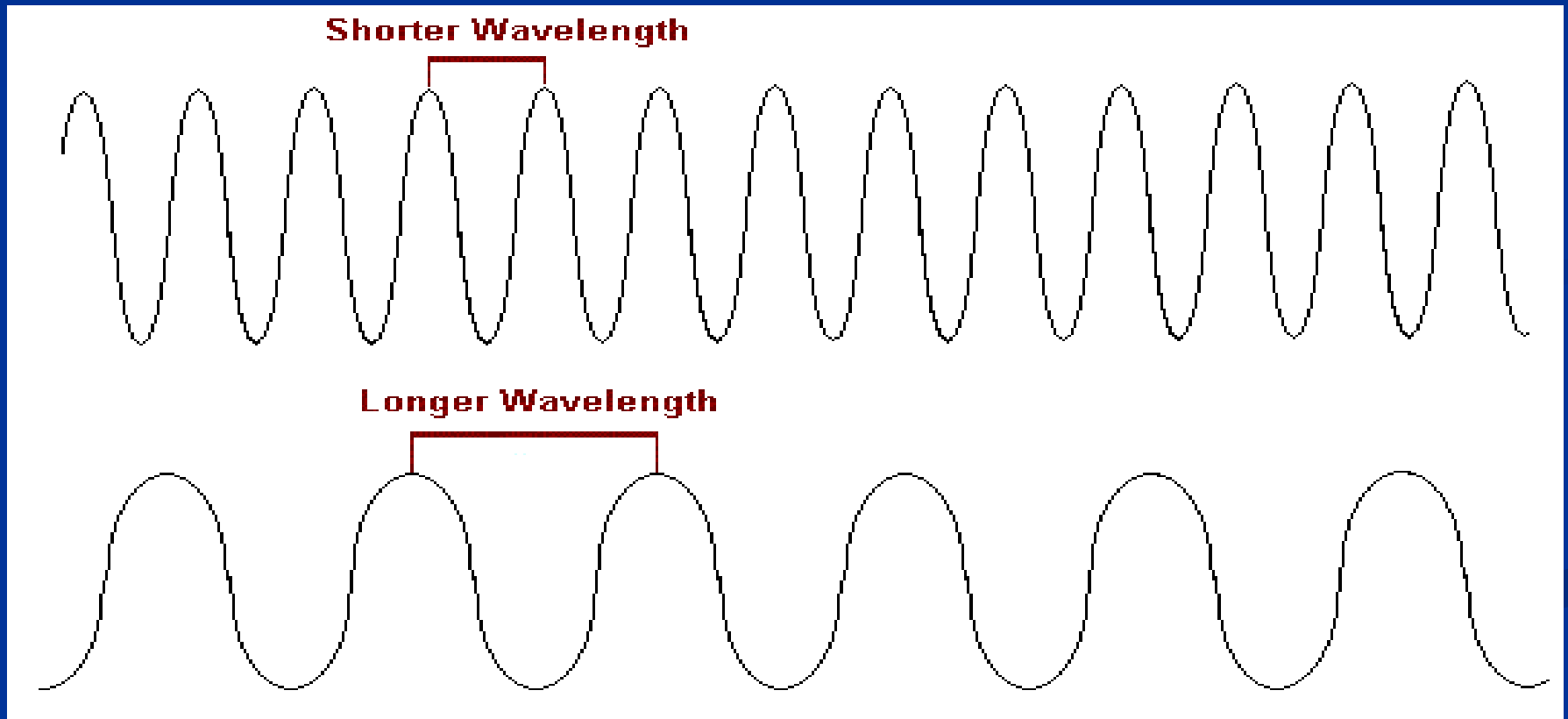
Parts of a Wave

1. Crest – the highest point of a wave.
2. Trough – the lowest point of a wave.



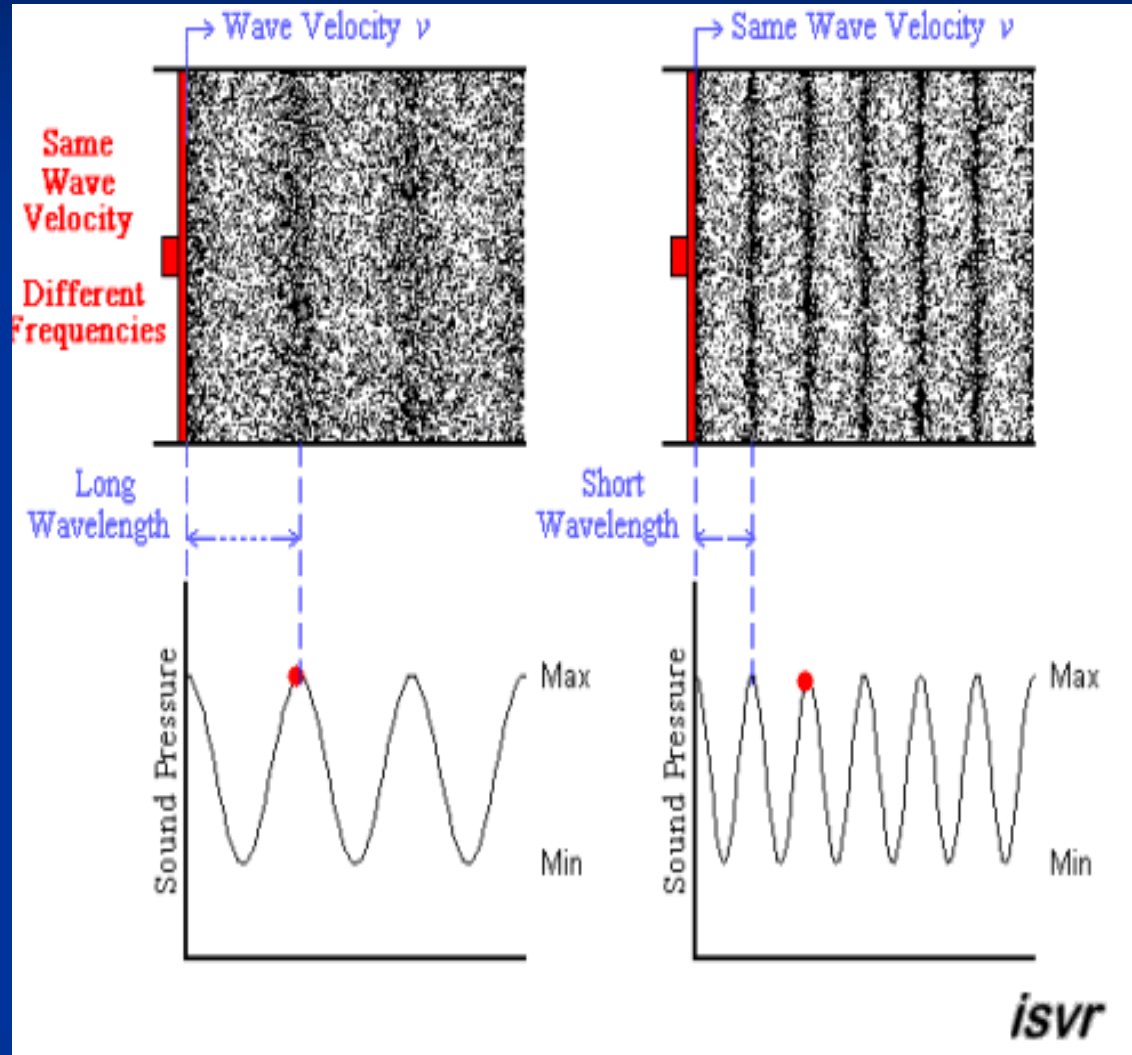
Parts of a Wave

3. Wavelength – The distance from one point on a wave to the corresponding point on the next wave.



Wavelength & Frequency

- Frequency – The number of wavelengths that pass a certain point each second.
- Therefore, the higher the frequency the shorter the wavelength.



Wavelength and Energy

- The shorter the wavelength the higher the energy
- The longer the wavelength the lower the energy

The electromagnetic spectrum



Radio



Microwave



Infrared



Visible



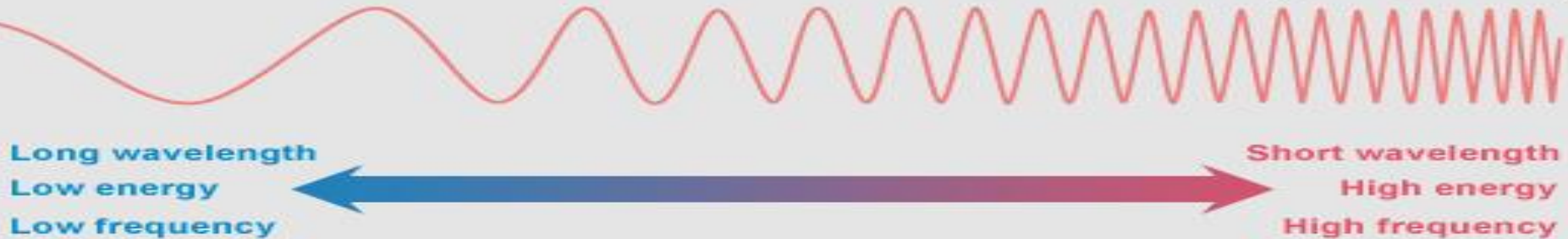
Ultraviolet



X-ray



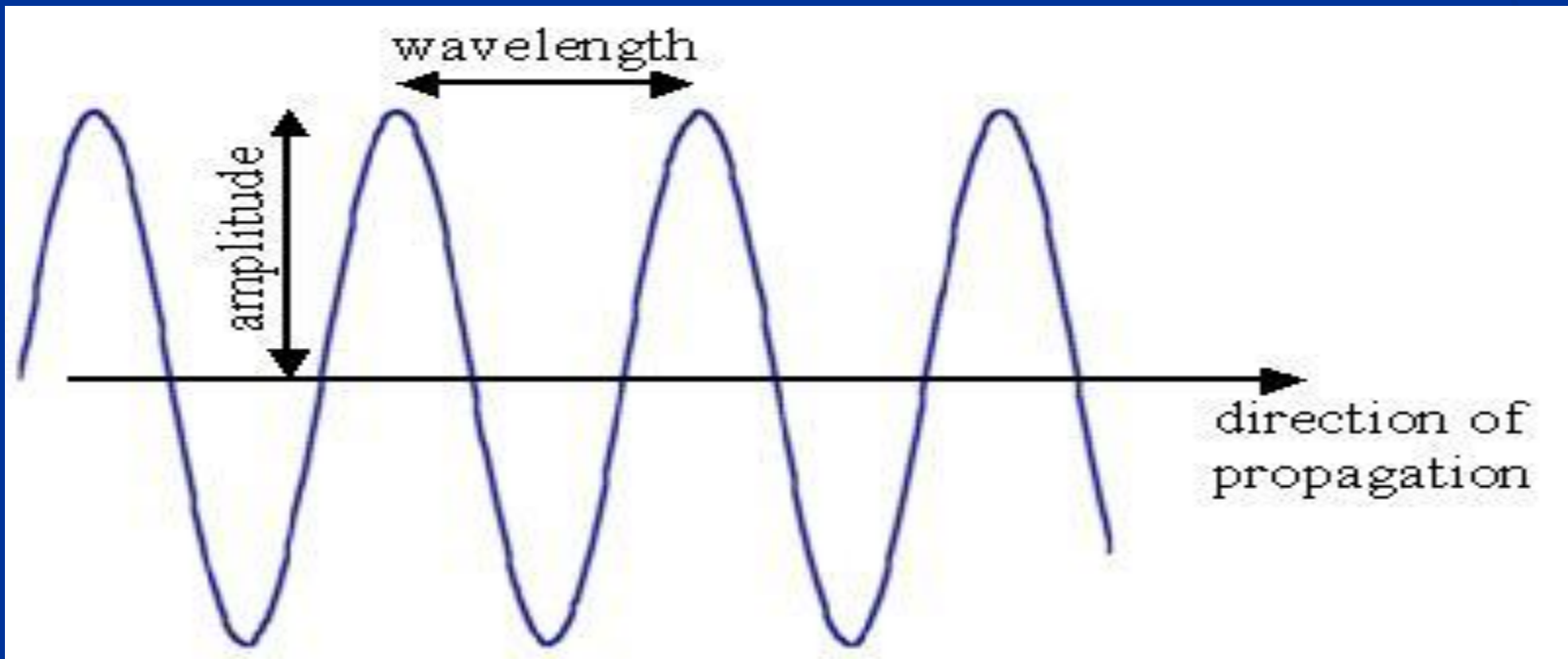
Gamma ray



The radiation behind radios, visible light and nuclear blasts is all exactly the same thing, just with different amounts of energy.

Parts of a Wave

4. Amplitude – The amount of energy in a wave.
- More energy means a higher amplitude.
 - The distance from the crest or trough to the midline of the wave.



Amplitude & Energy

- The greater the amplitude, the greater the amount of energy.

