Waves

Emily B, Emily S,
Makenna C, Nicole G,
Cecylia S

Waves

- wiggle in time and space
- source: vibration
- transfer energy (NOT matter) from vibrating source to receiver

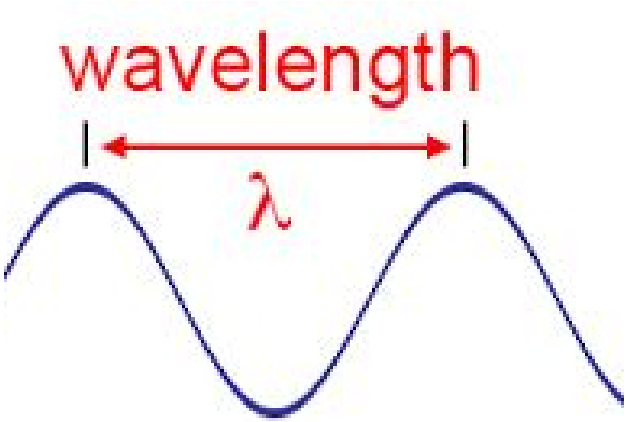
Qualities

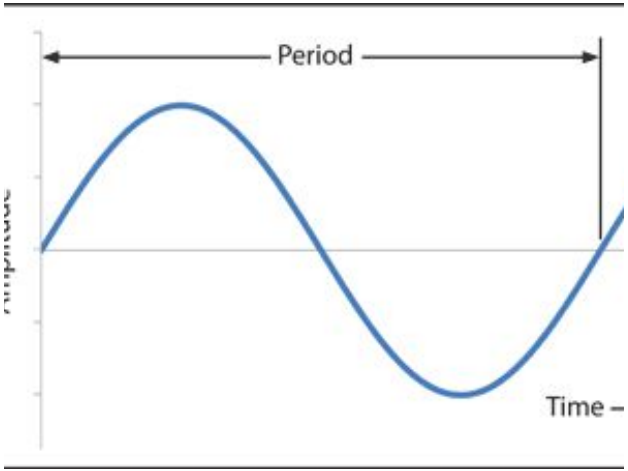
Period

- Time it takes for a back and forth cycle
- Measured in seconds (s)
- Variable: T

Wavelength

- Distance between one peak and the next
- Measured in meters (m)
- Variable: λ





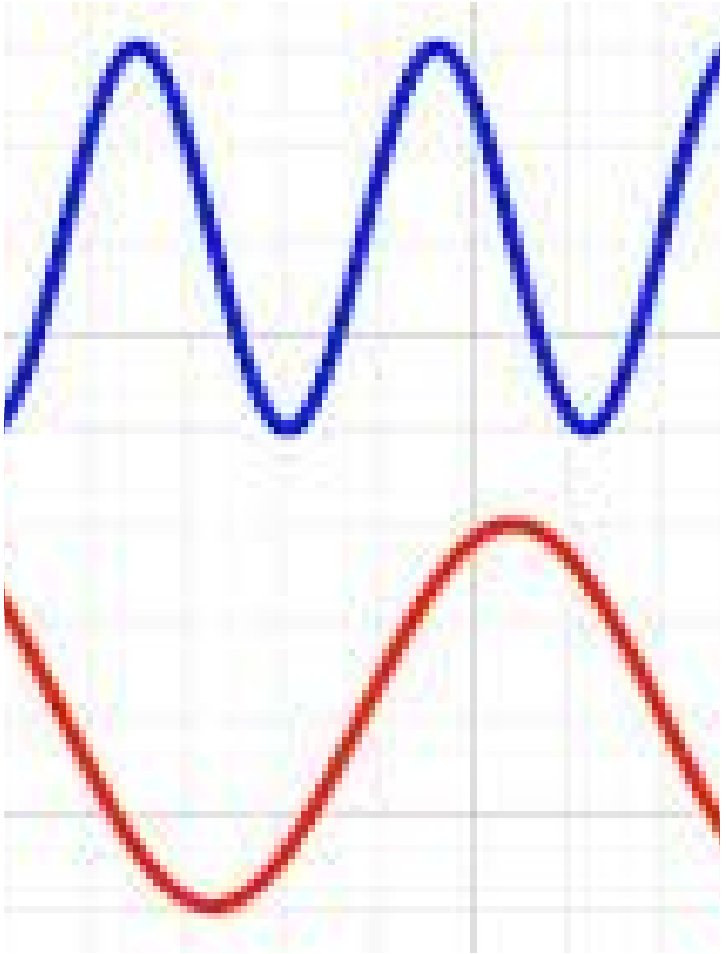
Qualities

Frequency

- Number of vibrations in a certain amount of time
- Measured in Hertz (Hz)
- Variable: f
- $f = 1/T$

Velocity

- Speed and direction of wave
- Measured in m/s
- Variable: V
- $V = \lambda f$



Qualities

Crests

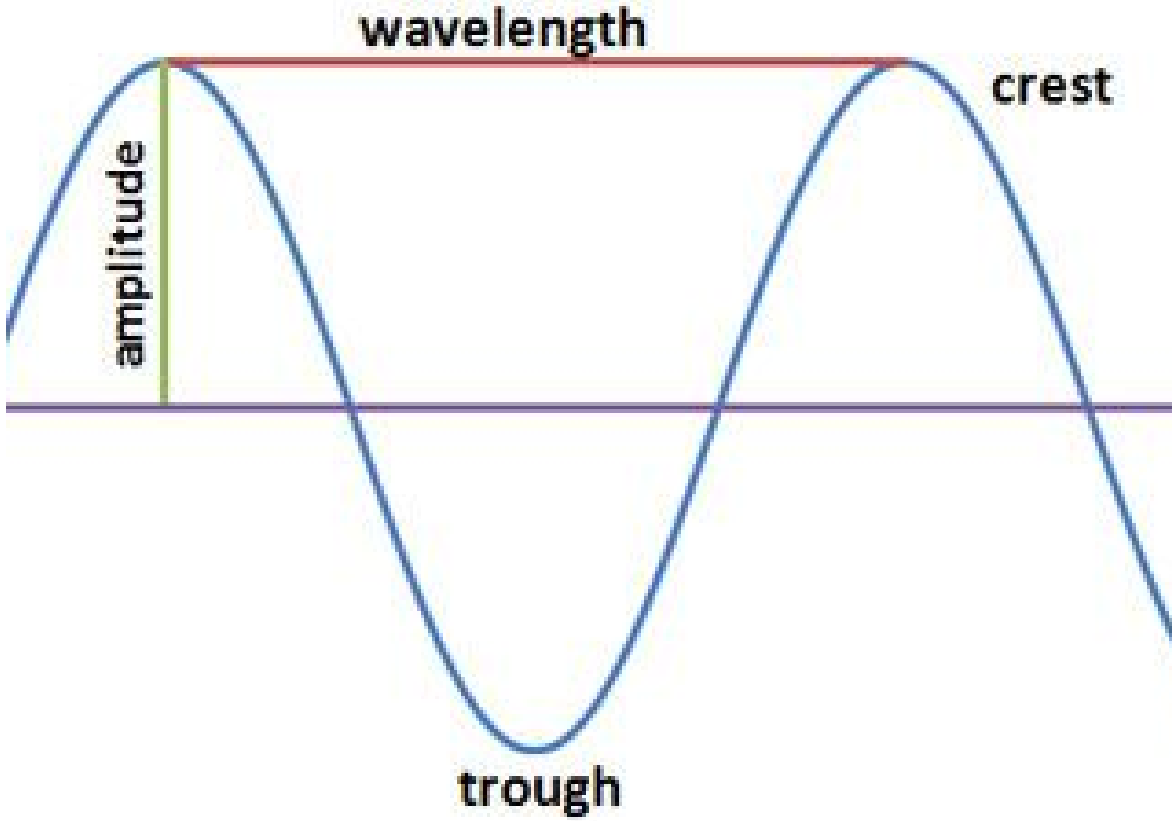
- High point of wave

Trough

- Low point of wave

Amplitude

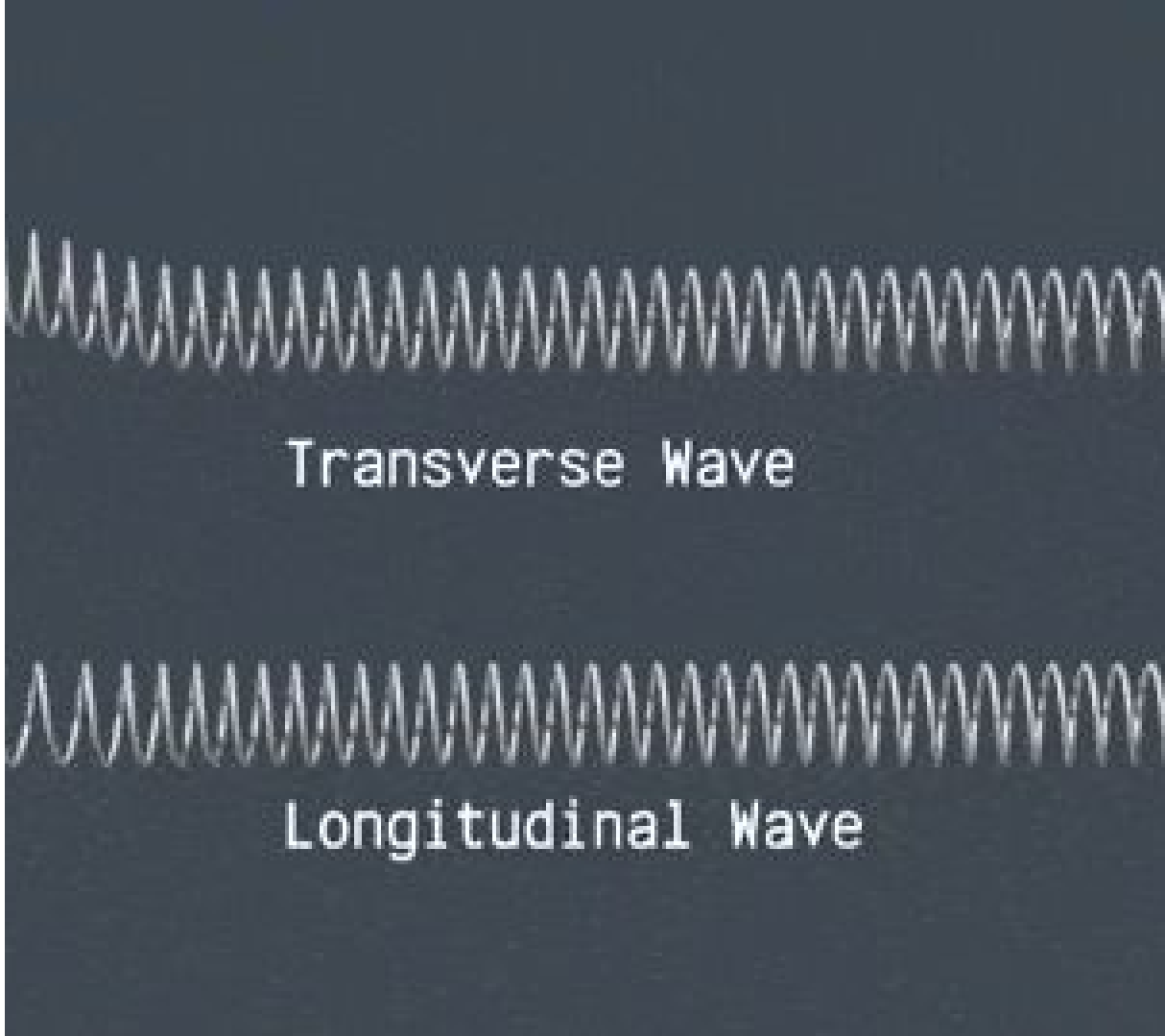
- Distance from midpoint to either a low or high point



Types

Transverse
- ex: light

Longitudinal
- ex: sound



Interference

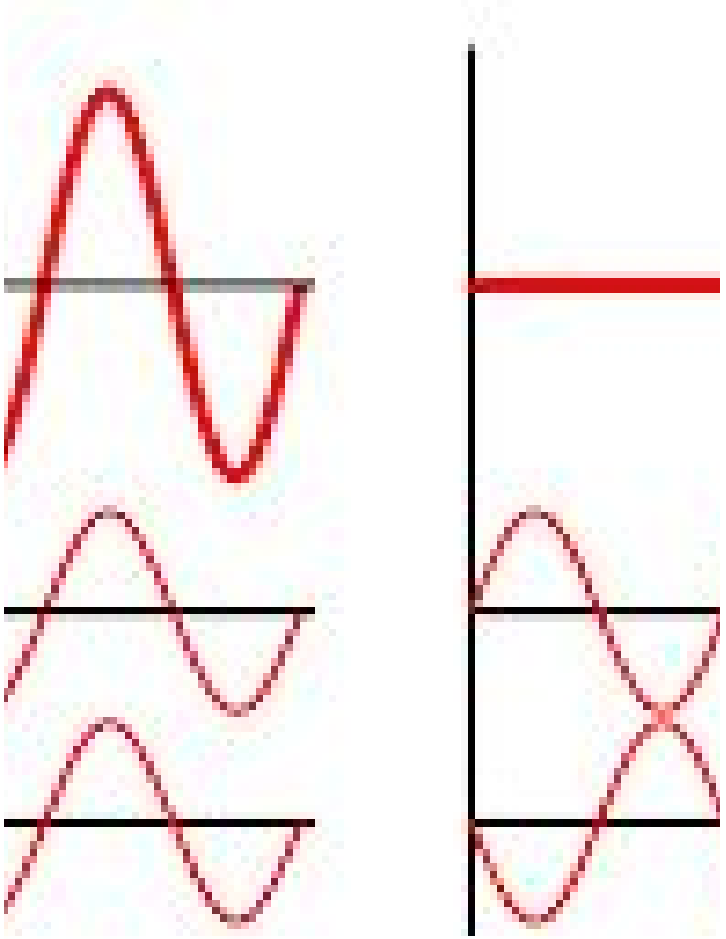
Happens when waves meet

Constructive Interference builds up the amplitude of the waves

- Happens when two crests meet

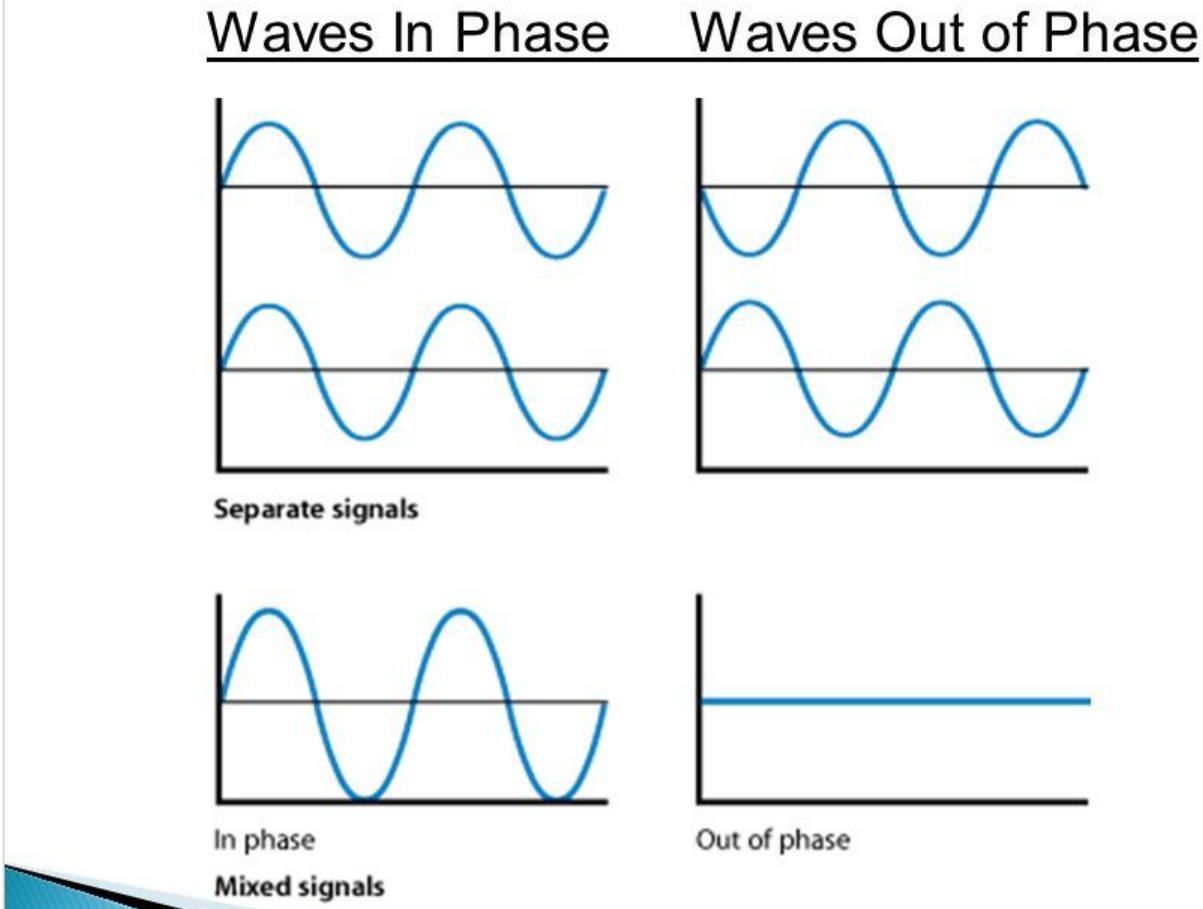
Destructive Interference shrinks the amplitude of the waves

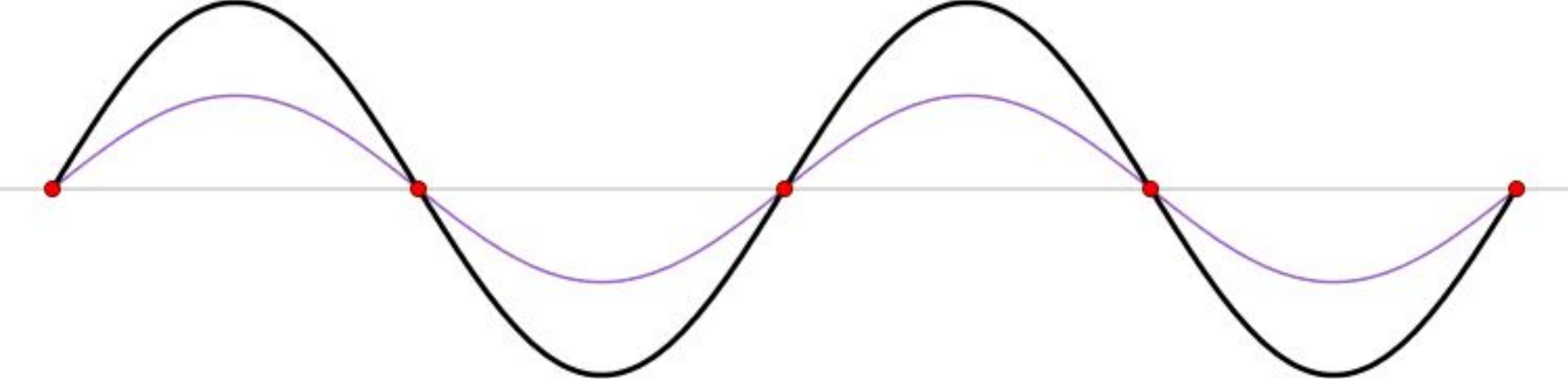
- Happens when a crest and a trough meet



Phase

- relationship between period and external reference point
- “in phase” = in synch
- “out of phase” = out of synch





Standing Waves

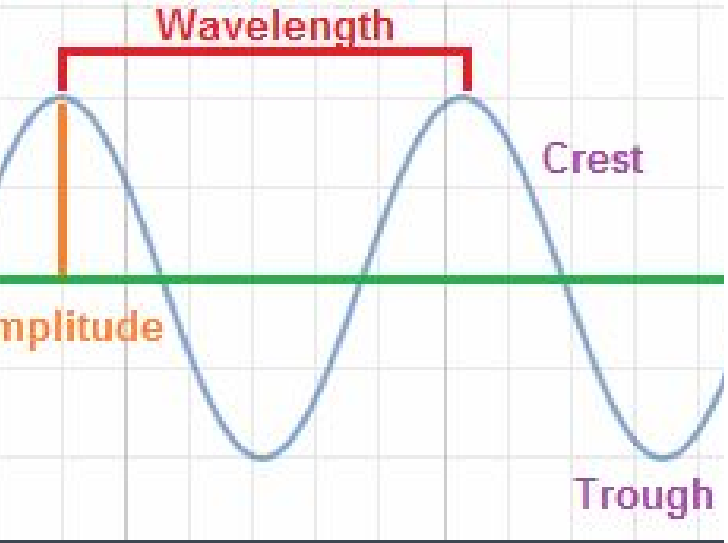
Occurs when two identical waves pass each other in opposite directions

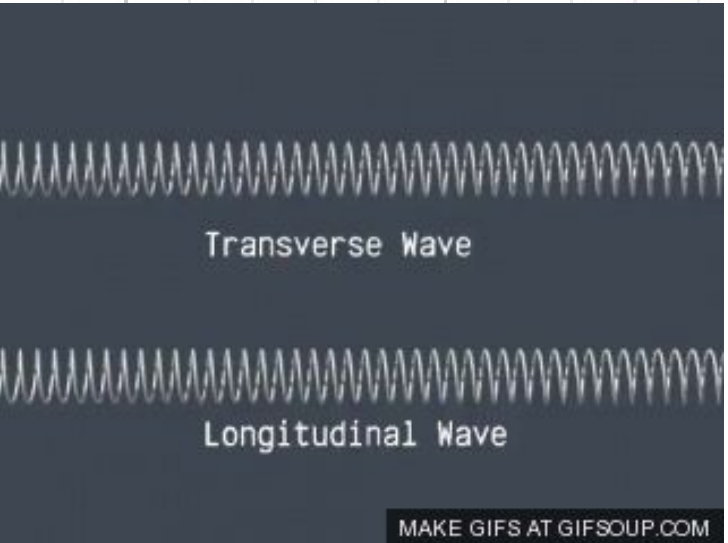
Nodes are located at the ‘stationary’ part of the wave

Antinodes are located at the highest and lowest points in the wave

Common Mistakes & Misconceptions

- Sound moves through different mediums at different speeds:
  - Solid > Liquid > Gas
- Variables
  - λ - Wavelength
  - T - Period
  - f - Frequency
- Mix up Frequency and Period
  - Period is Time per cycle
  - Frequency is Cycle per time
  - $f = 1/T$
  - $T = 1/f$





Common Mistakes & Misconceptions

- wavelength and amplitude
- longitudinal and transverse waves


Practice Problems!