

Warm-up:

Good Vibrations

The source of all waves is a vibrating object.

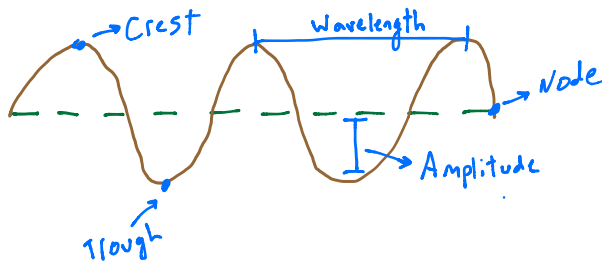
Complete the table below by identifying the source of each wave described.

Wave	Source
A tuning fork is struck with a rubber hammer, producing a sound wave.	Vibration of Metal
A motorboat moves through the water, leaving its wake behind.	Boat splis water
A performer sings a high note.	Vocal Chords
A light bulb gives off light.	Tungsten filament

• Waves: a vibration that transmits energy but not matter → i.e. light, sound, ocean, radio, etc.

Wave Anatomy:

- Medium: what a wave travels through
- Crest: high point
- trough: low point
- Amplitude: displacement from rest
- Wavelength: distance traveled by a single wave

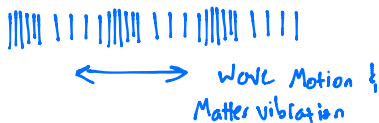


Two Main Types:

1. Transverse Wave: where particles move perpendicular to wave motion



2. Longitudinal Wave: matter vibrates in same direction as wave motion



$$\star v = \frac{d}{t}$$

- Distance traveled = Wavelength [λ]
- Time for one wave = Period [T]

- (cycles per time = Frequency [f])

$$f = \frac{1}{T} \quad \text{or} \quad T = \frac{1}{f}$$

★ Universal Wave Eq: $v = \frac{\lambda}{T}$ or $v = \lambda \cdot f$

- Interference: more than one wave occupies the same space @ the same time
↳ think of radio interference
- Standing Waves: wave where there are stationary positions [nodes]
↳ transverse wave

Entrance Ticket:

1) An air horn $f = 270 \text{ Hz}$, if the speed of sound in air is 330 m/s ,
What is λ ? $\frac{1}{5}$

2) Distance between crests is 4.0 m . The wave travels 8.6 m in 5 s .
What is the frequency?