

March 2: Waves

Objectives

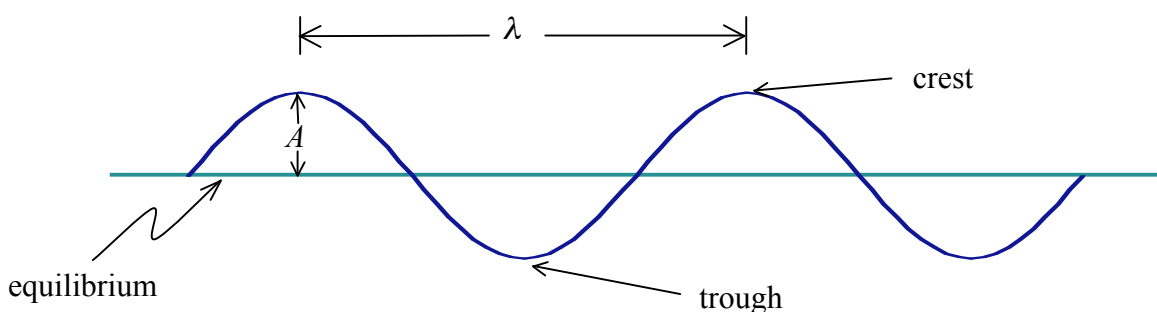
- Relate wave speed, frequency, wavelength, and period.
- Trace the movement of the medium in a string wave, in a sound wave, and in a compression wave in a spring.

What's the point?

- How can waves be described?
- Why do waves occur?

Wave Parts

A **wave** is a disturbance moving and repeating in space and time. Some of the important features of waves are:



crest: position of maximum positive disturbance

trough: position of maximum negative disturbance

amplitude A : extent of disturbance from the equilibrium value

wavelength λ : distance for one repeat (between successive crests or troughs)

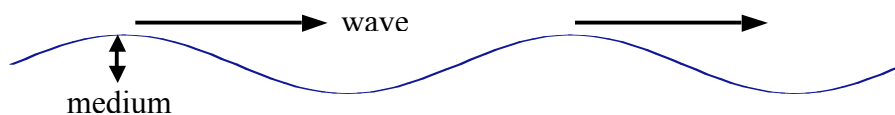
period T : time for one repeat (between successive crests or troughs)

frequency f : number of complete cycles in a specified time = $1/T$

velocity and speed: rate of movement of crest = $\lambda/T = \lambda f$

Limiting Categories of Waves

transverse: the disturbance of the medium is *perpendicular* to the velocity of the wave.



longitudinal: the disturbance of the medium is *parallel* to the velocity of the wave.

Sound waves are longitudinal.

