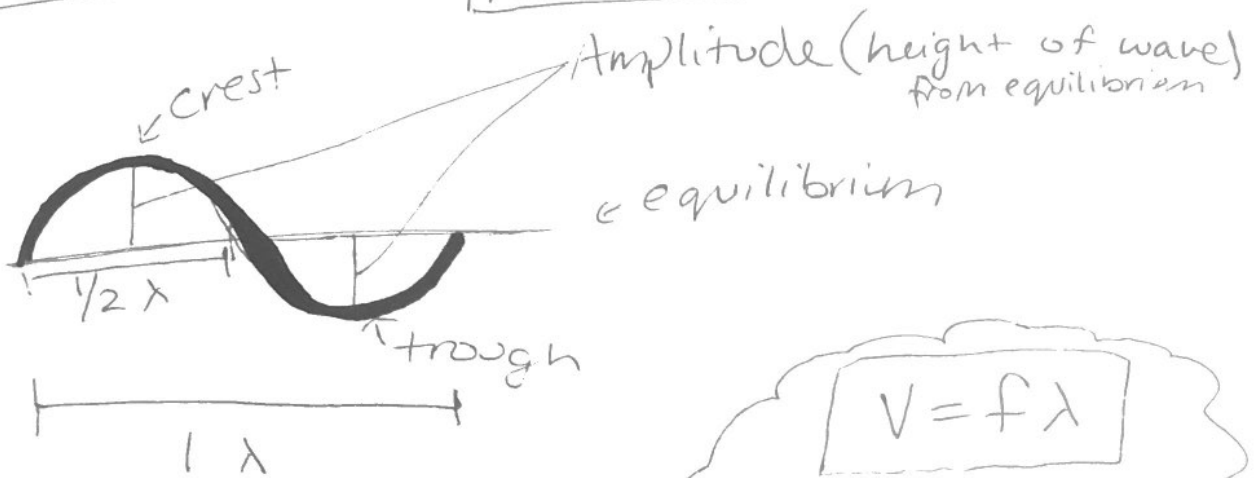


Wave notes

Transverse wave



$$V = f \lambda$$

V = velocity (m/s)

f = frequency (Hz)

λ = wavelength (m)

Frequency & Period

$$\text{frequency} = \frac{\text{cycles}}{\text{seconds}}$$

$$f = \frac{1}{T}$$

$$\text{period} = \frac{\text{seconds}}{\text{cycle}}$$

$$T = \frac{1}{f}$$

- frequency and period are inverse of one another.

Constructive and Destructive interference



← constructive
(construct together)



← destructive
(destruct)

Standing waves

Guitar String



1st harmonic

$$L = 30\text{cm} \quad \lambda = ?$$

length of string \rightarrow $L = \frac{n}{2} \lambda$

\leftarrow harmonic \leftarrow wavelength

$$\bullet 30\text{m} = \frac{1}{2} \lambda$$

$$\bullet \frac{30\text{m}}{.5} = \frac{.5 \lambda}{.5}$$

$$\boxed{.6\text{m} = \lambda} = 60\text{cm}$$

If speed of sound is 343m/s , what frequency is the string vibrating at?

$$v = f\lambda$$

$$\frac{343\text{m/s}}{.6} = f \left(\frac{.6\text{m}}{.6} \right)$$

$$f = 571.7\text{Hz}$$