

Simple Harmonic Motion

- pendulum
 - tire swing
 - planets
- } oscillating in time
→ stay in place
- ocean waves
 - sound waves
- } oscillating in space
→ move forwards

Waves

Simple Harmonic Motion: motion that repeats itself

Period: time of a single cycle
 • time between points w/ the same phase [s]

Phase: same point in the cycle

Amplitude: Height of the wave
 distance from equilibrium [m]

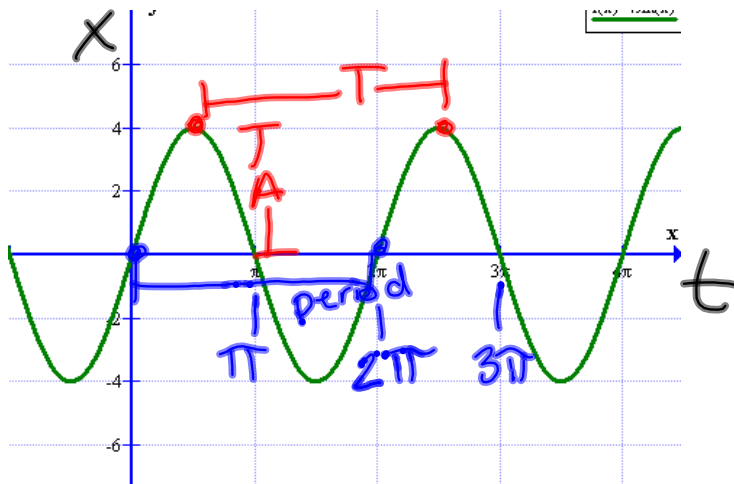
Frequency: How often a cycle occurs

$$[\text{cycles/sec}] = \left[\frac{1}{s} \right] = [\text{Hz}]$$

$f = \frac{1}{T}$ reciprocal of period

Hertz

Equilibrium: balanced in the middle,
 forces are all equal.



Amplitude : 4

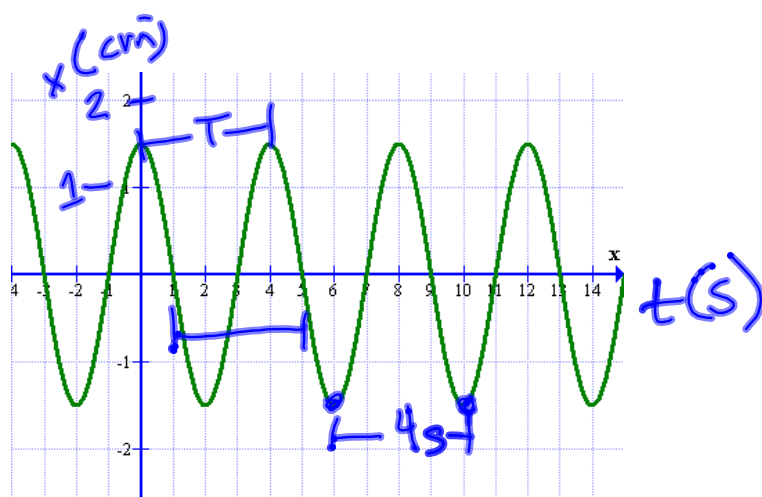
$$A = 4 \text{ m}$$

Period : 2π

$$T = 2\pi \text{ s}$$

Frequency :

$$f = \frac{1}{2\pi} \text{ Hz}$$



$$A = 1.5 \text{ cm}$$

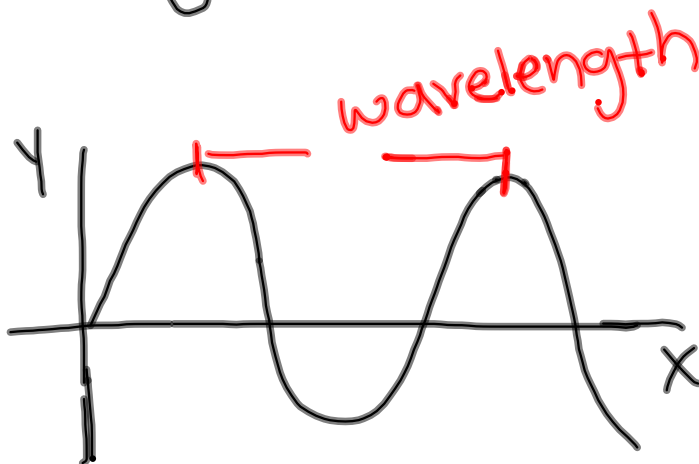
$$T = 4 \text{ s}$$

$$f = \frac{1}{4} \text{ Hz}$$

Mechanical Waves

- Ocean waves
- Sound waves
- Light waves

* propagate forwards



λ

λ ← symbol for wavelength