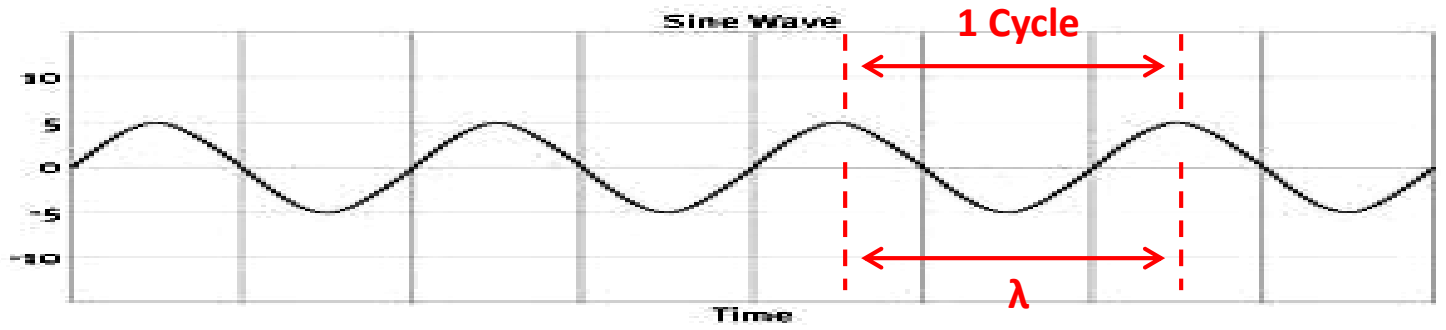
Period & Frequency

$f = 1/T$

- Period of a wave (T)
  - The time it takes a wave to complete one cycle.
  - T is measured in seconds

- Frequency of a wave (f)
  - The number of cycles that can be completed in 1 second
  - f is measured in Hz (Hertz)



Wave Equation

$$v = \lambda f$$

- Speed (v) of a wave is a property that ties together frequency and wavelength.

- Speed of a wave depends on the property of the medium.
  - e.g. speed of light in air is greater than speed of light in crown glass (Grade 10 Optics)
  - Therefore the wavelength changes to compensate and the light ray bends (Grade 10 Refraction)

Examples

1. The frequency of Middle C on a piano is 262 Hz. What is the period of the sound wave?
   - Use: $f = 1/T$ or $T = 1/f$
   - Answer: 0.00382 s
   - 3.82×10^{-3} s

2. If the speed of sound is 344 m/s, what is the wavelength of Middle C?
   - Use: $v = \lambda f$ or $\lambda = v/f$
   - Answer: 1.31 m