Note Guide Waves Part 1

* Think of your favorite kind of wave…
* The waves that are the most important tend to be the waves that are invisible or don’t look like waves.
* Some examples of common waves:
  + Sound
  + Ripples on a pond
  + Light
* A ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** or an ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** is a motion that goes back-and-forth until it comes to rest at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* This equilibrium is the point of lowest **U.**
* The motion of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ depends on the restoring force that makes the back-and-forth motion.
* A wave can be drawn out by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(a pendulum) SHM
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** points on the wave move perpendicular to the direction of motion.
  + **Ex: ocean waves, electromagnetic**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** points on the wave move back and forth in line with the direction of the wave
  + **Ex: Sound, shock waves**
* Transverse Wave
* Longitudinal Wave
* **Simple Harmonic Motion** (SHM): is the motion when a force from Hooke’s Law is applied.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (T)**: the time it takes the object to complete one cycle of motion.
* **Frequency (f):** the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per second.
* Period and frequency are related by:

**Units of frequency: 1/s, Hz, s-1**

**Units of Period: sec, s**

* Other common terms:
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: single oscillation is sent
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: self explanatory
  + **Periodic Wave:** a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, constant, f, T and λ
* Velocity of a Wave!

V = f λ

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = wavelength/ period

V = λ/T

* For electromagnetic wave, their velocities are all the speed of light.
  + - Speed of light (c) = 3.0 E 8 m/s
* The variety (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) comes by varying frequency and therefore wavelength!
* Some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will vary the speed of a type of wave with different λ, f (glass, water)