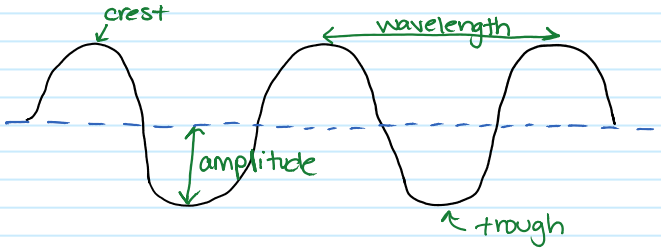
4.1 Properties of Waves
November-07-16 9:45 AM

UNIT #2 OPTICS

A wave is a disturbance or movement that transfers energy through matter or space
ex. water waves, sound waves, and microwaves



crest: is the highest point on a wave

trough: is the lowest point on a wave

wavelength: - the distance for 1 complete cycle of the wave
- crest to crest or trough to trough

amplitude: the height of a wave crest or depth of a trough as measured from its rest position

FREQUENCY

- the # of repetitive motions or oscillations that occur in a given time.
- measured in Hertz (Hz)

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

Ex. #1 Hummingbird flaps wings 120 times in 3 seconds. Calculate the frequency?

$$F = \frac{120}{3} = 40 \text{ Hz}$$

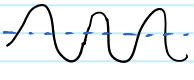
Ex. #2 DVD spins 35 times in 7 seconds.

$$F = \frac{35}{7} = 5 \text{ Hz}$$

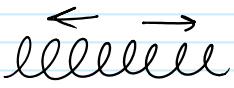
- the matter that waves travel through is called a medium ex. water
  - some waves (light waves) can travel through space where there is no medium

2 types of Waves:

1. Transverse
   - waves move up and down
   - perpendicular to the direction of the wave



2. Compression
   - waves move back and forth
   - along the same direction that the wave travels (parallel)



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