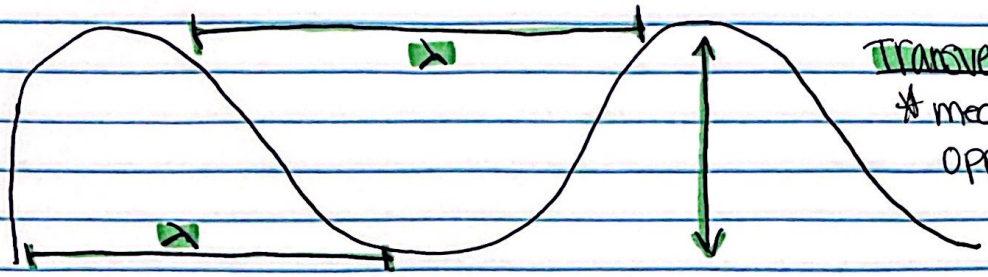
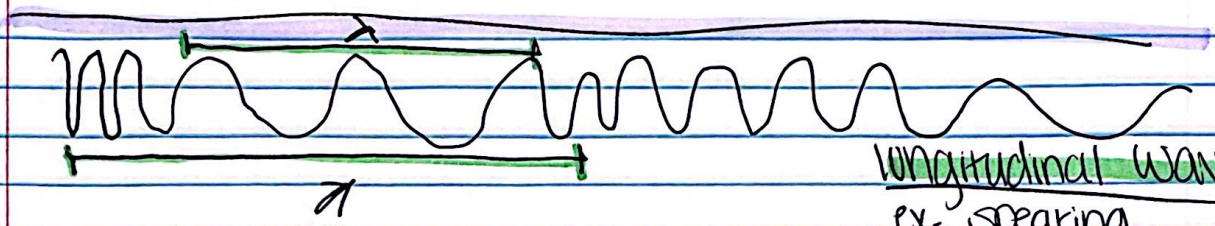
Chapter 11.8

September 9th

Transverse & Longitudinal Wave



Transverse Wave
* medium is moving opp. of plane.



Longitudinal wave
ex- speaking drums

Speed of longitudinal waves

$$v = \sqrt{\frac{\text{elastic face factor}}{\text{inertia factor}}}$$

$$V = \sqrt{\frac{F_t}{m/L}}$$

$$\hookrightarrow \sqrt{F_t/\mu}$$

solid medium (metal rod)

$$v = \sqrt{\frac{\varepsilon}{\rho}}$$

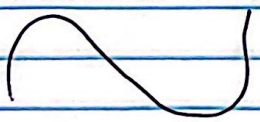
ε = elastic modules
ρ = density.
↳ roe

liquid/gas medium (air, liquids)

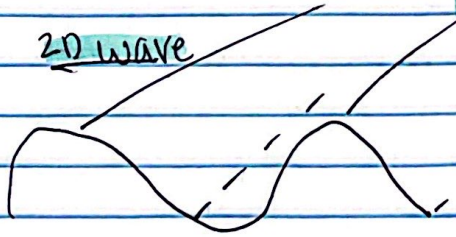
$$v = \sqrt{B/\rho}$$

B = bulk modules
ρ = density.

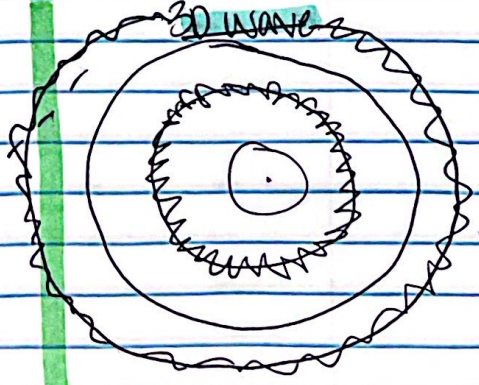
1D wave



2D wave



3D wave



CHAPTER 11.7

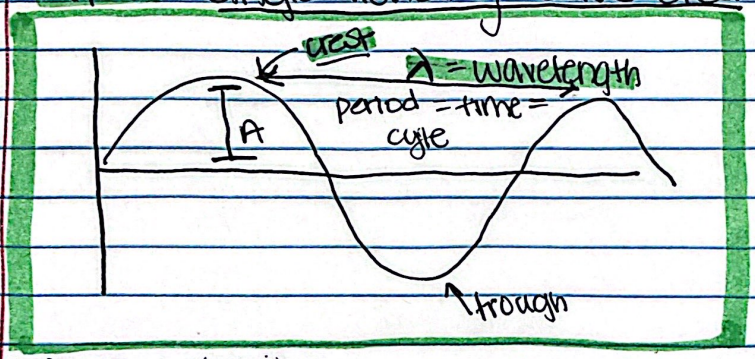
Chapter 11.7 September 9th

important definitions

Wave motion

Mechanical waves: vibrations that travel through a medium
↳ goes through matter, does not carry matter carries energy.
- carries energy

Pulse- single traveling wave crest.



crest - top of wave
trough - bottom (valley)
λ (lambda) - wavelenght.

important equations.

Wave velocity

V_w = wave velocity

$= \lambda f$

λ: length of wave (m)
f: how frequently the waves happen (Hz) = 1/sec

magnitude of velocity.

$$V = \sqrt{\frac{F_T}{m/L}}$$

for a stretched string/cord.