

Chapter 8

- wave properties
- types of waves (transverse/longitudinal/surface waves)
- mechanical/electromagnetic/matter waves
- period/frequency $T = \frac{\text{time}}{\text{cycles}}$ $f = \frac{\text{cycles}}{\text{time}}$ $T = \frac{1}{f}$
- universal wave equation $v = \lambda f$ $f = \frac{1}{T}$
- waves at a boundary: partial transmission/partial reflection
- wave interference: constructive/destructive/standing waves
- waves in 2D: reflection/refraction/diffraction
- * speed depends on the medium NOT the f , λ or amp.
- * frequency stay the same when a wave travels into a new medium

Chapter 9

Sound - speed of sound equal

- echoes
- doppler effect
- resonance ($L_n = (2n-1)\frac{\lambda}{4}$ (closed), $L_n = n\frac{\lambda}{2}$ (open))
- beats $f_{\text{beat}} = |f_2 - f_1|$ $f_n = (2n-1)f_1$, $f_1 = nf_1$)
- Mach #

Light - Law of Reflection

- Regular/Diffuse Reflection
- Refraction

$$\Rightarrow n = \frac{c}{v}$$

$$\Rightarrow \text{Snell's Law: } n_i \sin \theta_i = n_r \sin \theta_r$$

\Rightarrow Critical Angle (max \rightarrow less dense)

$$\theta_i = \theta_c, \theta_r = 90^\circ$$

↑
the critical angle.