Things to Memorize: Waves

Types of Waves

- **Longitudinal Waves** - Are waves in which the displacement is perpendicular to the direction of travel. (like an ocean wave)
- **Transverse Waves** - Are waves in which the displacement is along the same axis as the direction of travel. (Like a Sound Wave or a shock wave)
- **Electromagentic Waves** - are all forms of light (both visible and invisible)

Wave Measurements

- **Crest**s are the highest points on a wave.
- **Trough**s are the lowest points on a wave.
- **Amplitude** - How big or strong a wave is. Measured from center to crest or center to trough.
  - We see the amplitude of visible light as **brightness**.
  - We hear the amplitude of a sound wave as **volume** (loudness).
- **Wavelength** - The distance (in meters) from one point on a wave to an identical point on the wave.
- **Period** - The time it takes a wave to repeat itself.
- **Frequency** - How many times a wave repeats itself in one second.
  - We see the frequency of a light wave as **color**.
  - We hear the frequency of a sound wave as **pitch**.

Wave Phenomena

- **Interference** - Two waves overlap.
  - If they make a bigger wave, it is **constructive** interference.
  - If they make a smaller wave, it is **destructive** interference.
- **Resonance** - one wave creates a similar wave in a nearby object. (Like when a saxaphone plays a note, the snare drum starts to vibrate).
- **Doppler Effect** - The frequency of a wave seems to change due to the motion of the source and the observer.
  - When they move toward each other, a higher pitch is observed.
  - When they move away from each other, a lower pitch is observed.
- **Refraction** - A wave changes direction due to a change in **medium**.
- **Diffraction** - A wave changes direction due to interaction with a sharp edge of an object.
- **Polarization** - The direction that a wave is vibrating.