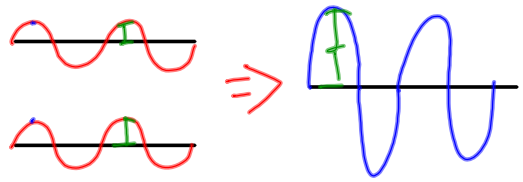
Resonance

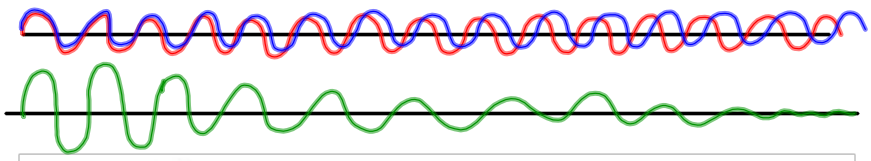
When something is driven (pushed) at the same frequency as its fundamental frequency.

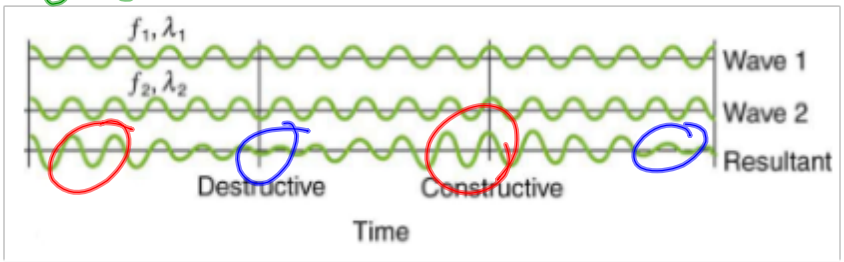
EX: a good push on a swing

Beats

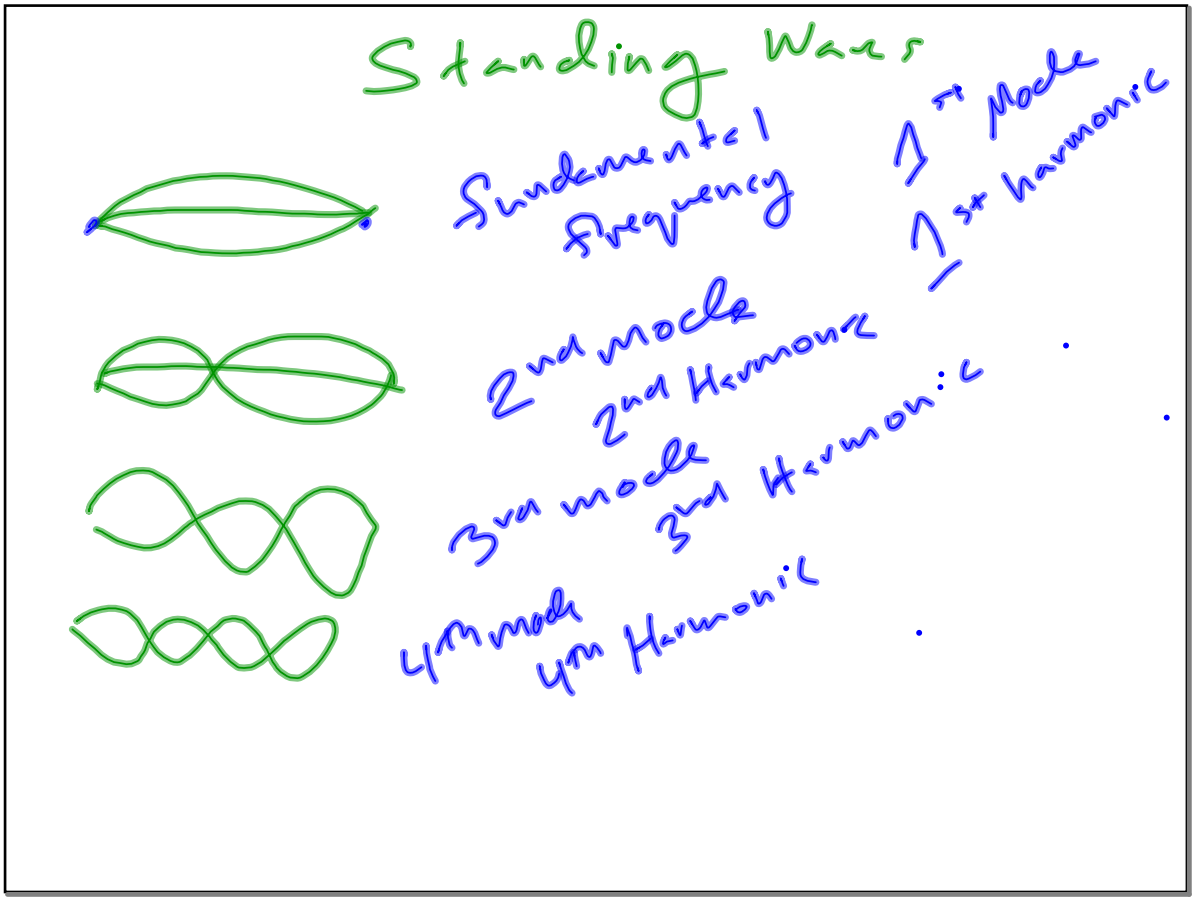


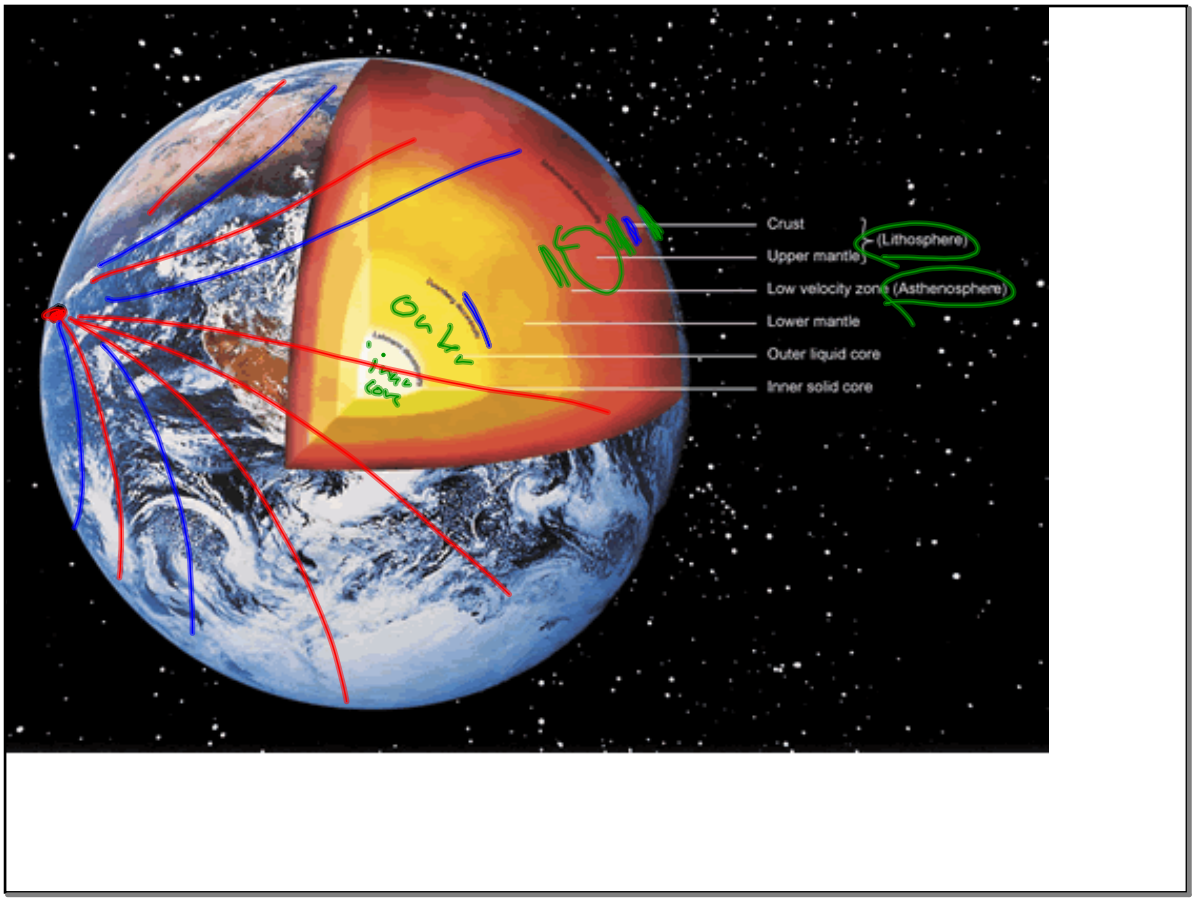
higher Amplitude = louder volume





Beats: When 2 interfering waves have frequencies that are similar but not exactly the same


Standing Waves
Fundamental Frequency
1st Mode
1st harmonic
2nd mode
2nd Harmonic
3rd mode
3rd Harmonic
4th mode
4th Harmonic


Crust
Upper mantle
(Lithosphere)
Low velocity zone
(Asthenosphere)
Lower mantle
Outer liquid core
Inner solid core

Earthquakes

Longitudinal

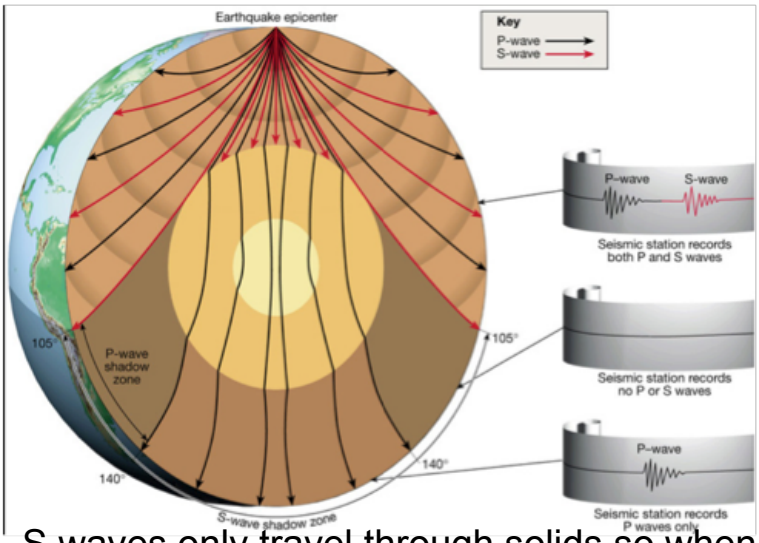
P-wave → primary

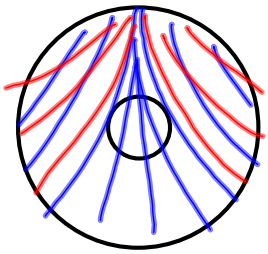
can travel through all types of malter (solids, liquids, gasses)

Transverse

S-waves → secondary

only travel through solids



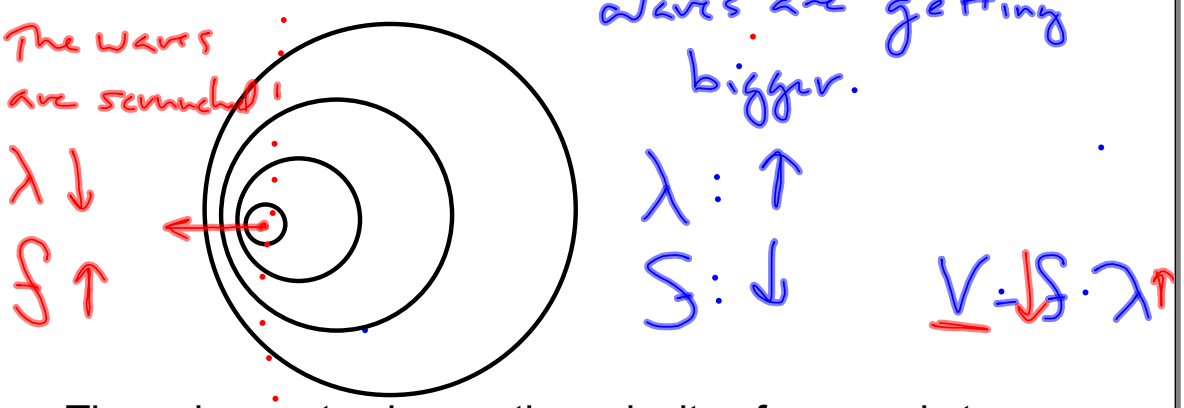


S waves only travel through solids so when an earth quake happens the other side of the earth only receives P waves but not the S waves, so that proves that the middle of the earth is liquid

Primary waves can go through the core but secondary wave go through solids and no more.

Doppler Effect:

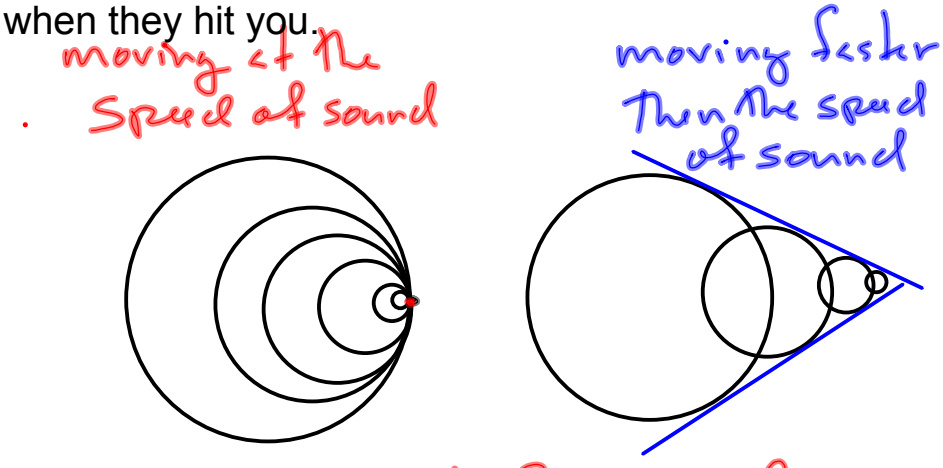
apparent change in the frequency (pitch) of a wave due to the relative motion between the source and the observer.



The only way to change the velocity of a wave is to change the material it is moving through.

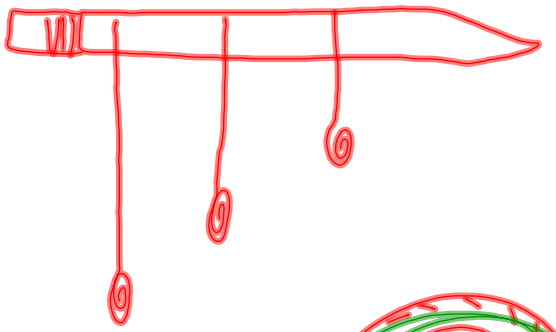
Sonic Boom

An object emitting sound passes fast enough for the sound waves to stack up and create a boom when they hit you.



The speed of sound is 340 m/s

Brain Transducer



move your hand at the fundamental frequency of the string you are trying to move to cause the string to resonate.

Ears: