**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

Diagram of Earth's interior with labels for crust, upper mantle, lower mantle, outer liquid core, and inner solid core.
S waves only travel through solids so when an earthquake 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: