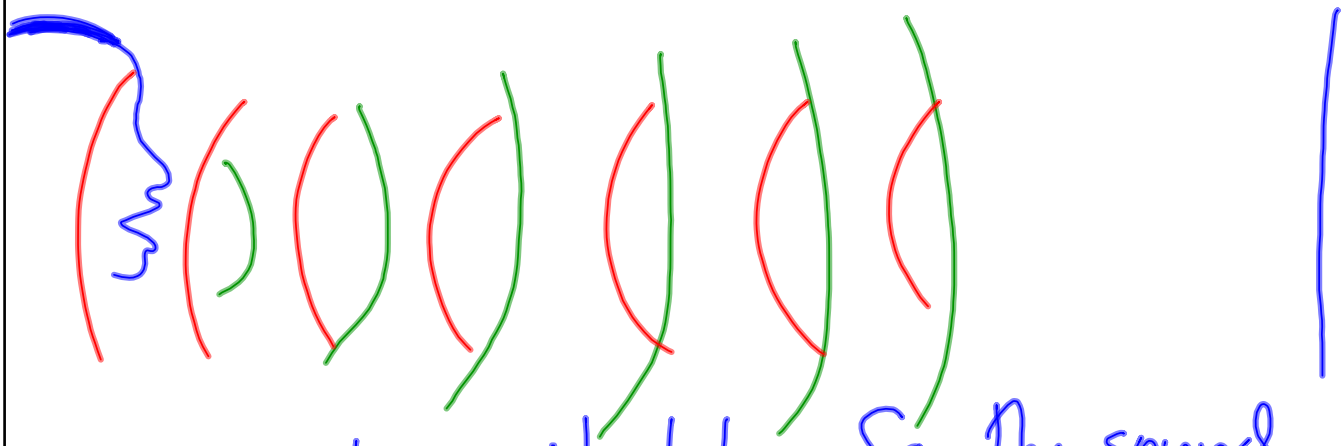
Echolocation:

richochet's

Echo: a sound wave bounces off of another object and returns to the sender.

Bob



The time it takes for the sound to return to the sender tells you how far the object is from the sender

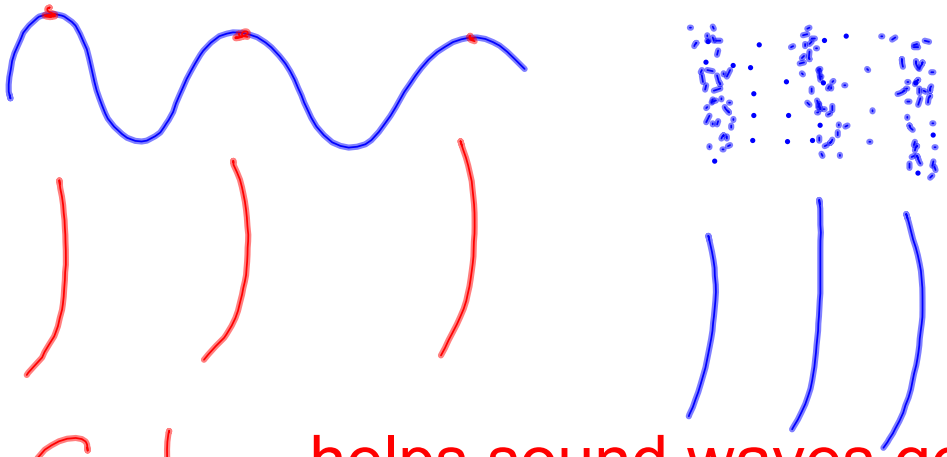
Speed of sound = 340 m/s | Mach 1

Mach 2 = 2(340 m/s)

= 680 m/s

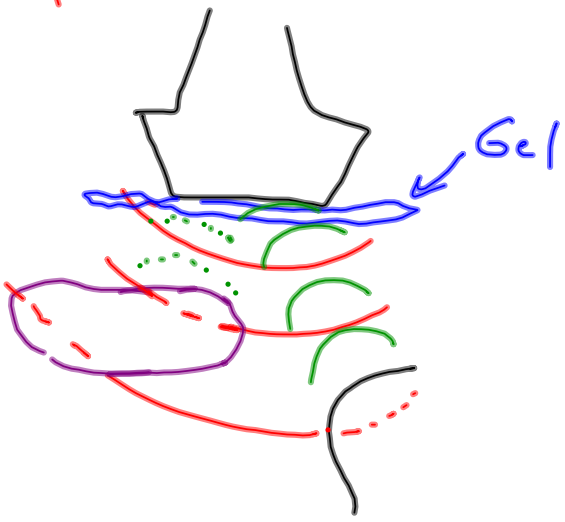
Ultrasounds

f is higher then we can hear
> 20,000 Hz



Gel = helps sound waves get absorbed

Purpose: show muscles / bones / other below skin



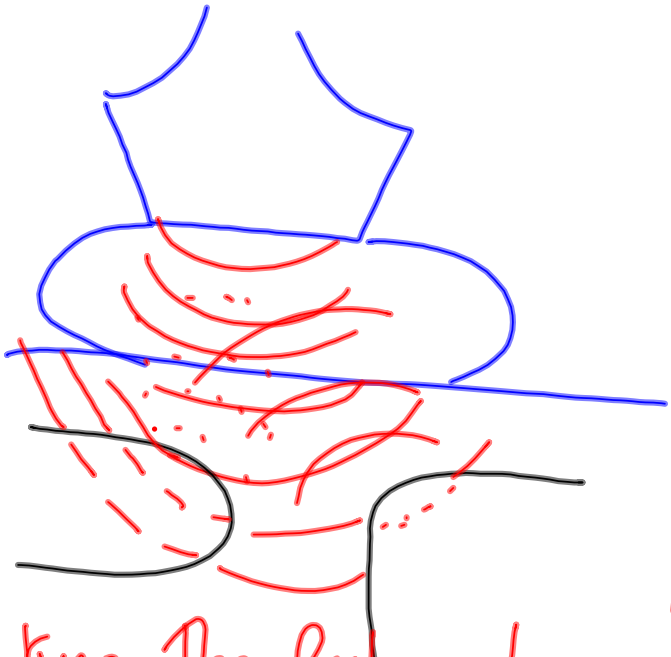
1) Time for wave to return = distance
2) strength of the wave that returns tells the type of material

Ultrasound

Sending and recieving sound waves (longitudinal)

f must be above 20,000 Hz

Gel: helps the sound waves travel through the skin



1) We can tell the type of material by looking at the intensity of wave that bounces back

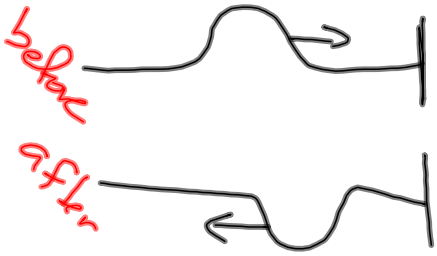
2) Know the distance to the object by looking at the time it takes the wave to return

Reflection

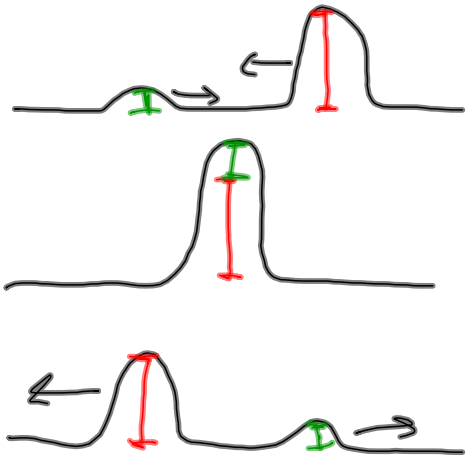
2 types of boundaries:

Fixed/Closed

The end is stationary

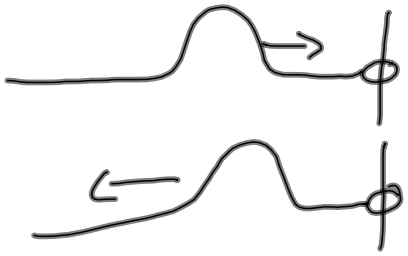


Constructive Interference

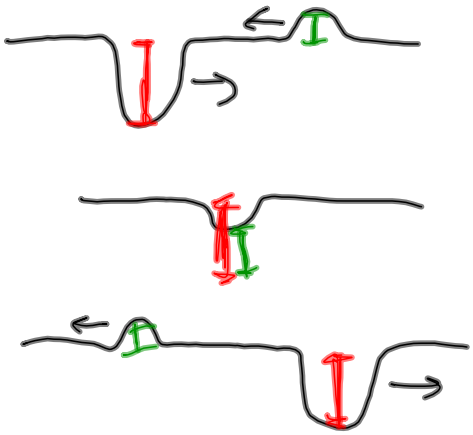


Loose/Open

The end can move



Destructive Interference



Superposition

when multiple waves interfere with each other