SOUND NOTES (TUE, MAY 23, 2006)
1) Reminder: Amusement Park Group Labs due Thur or Fri, May 26th..
2) sound HW tonite (due by Wed May 31), Sound Lab Wed/Thur (due Fri June 2), Music HW due June 5, Test June 6th, Exam essay in class June 8, Group Lab exam June 9.. then exam)

What causes sound waves?
---- *pattern of disturbance in a medium…. Vibrations/oscillations… in space no one can hear you scream.*

What are the parts of a sound wave?
Sound waves are really longitudinal/density/compression waves, but we draw them like transverse waves. Crest is compression, trough is expansion (rarefaction), amplitude is strength which is like the loudness of a sound wave. Frequency (waves pre second) tells you pitch of the wave….

What properties of a sound wave change frequency, speed? Etc…
Shorter objects have a shorter wavelength, which is a higher frequency/pitch.
Size, thickness, length, tightness all change pitch.

Speed of sound, depends on the material. Denser objects (water, steel) have faster speed, but may die out quicker due to friction.
Speed also depends upon temperature, hotter objects move faster because the molecules are already moving faster.
V sound in air = 331 + .6* Temp so @ 20 °C V = 343 m/s

What direction does sound travel in? How does the intensity (power/Area) of sound change?
Sound travels in all directions, in a sphere,. Intensity is power (energy/time) per area.. so intensity of a sound is watts per square meter, power/ (4 pi* r^2)

We measure loudness in decibels: dB = 10 I/I_0 . So every 10 decibels is twice as loud, is ten times the intensity.

How does sound change when the source is moving? (Doppler)
Sound waves get pushed together in front of the source, so higher frequency as it is coming towards you and lower frequency as it goes away from you. (race car example)

What causes sonic booms?

Going faster than the speed of sound causes air to build up

[soundbarrier Movie](#)

Tuning fork investigation: Observe how the sound of a tuning fork changes as you place it on different materials.

Observe how the sound of a tuning fork changes as you move it