Homework #3

For these problems, assume that the speed of sound in air is 345 m/s (this is the speed of sound at a temperature of 73° F).

1. What phenomenon allows you to hear around corners? Why don't we see around corners?

2.   For the same loudness, which is easier to hear around corners tubas or flutes?

3. For two pure tones heard together with the same amplitude but with slightly different frequencies (435 Hz and 440 Hz respectively), what do you expect to hear (what is the name of the phenomenon and what frequency will it have)? Why is it important for the waves to have nearly the same amplitude?

4. You see a lightening flash and then 4 seconds later you hear the thunder. How far away was the lightening?

5. What is the wavelength for waves in air with frequency: 20 Hz, 440 Hz, 10,000 Hz, and 150 kHz (bat sounds)? What are the wavelengths of waves at these frequencies in seawater where the speed of sound is 1550 m/s?