Problem Set #1

Due Monday, April 20 by 5pm to Dickinson 104

1. Define, *in your own words* the following terms; note any connections between the terms:
    a. Longitudinal wave
    b. Transverse wave
    c. Frequency
    d. Amplitude
    e. Period
    f. Wavelength
    g. Node
2. The E string of a violin has a period of 0.001515s. Find the frequency with which it vibrates.
3. Suppose that you hear a clap of thunder 16.2 s after seeing the associated lightning strike. The speed of sound waves in air is 343 m/s and the speed of light in air is 3.00×10^8 m/s. How far are you from the lightning strike?
4. A harp string has a length of 30.5 cm and vibrates with a node at each end and an antinode in the center. If its frequency is 440 Hz, find:
    a. The period
    b. The wavelength
    c. The speed of the waves on the string