

Wave Characteristics

Name: _____

Note: $c = 2.998 \times 10^8$ m/s

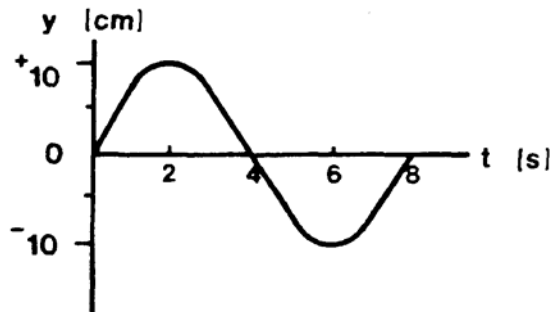
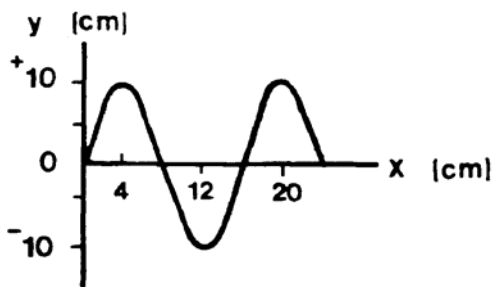
1. The frequency range for a normal human ear is between 20 Hz and 20,000 Hz. Using 330 m/s as the speed of sound,
 - a. Calculate the shortest wavelength of sound that can be heard:
 - b. Calculate the longest wavelength of sound that can be heard:

2. The local hit music radio station, WPHD, can be found at 103.6 on the FM dial. This means that they broadcast at a frequency of 103.6×10^6 Hz (103.6 Megahertz). What is the wavelength of these radio waves?

3. The wavelength of radio waves sent out by an AM station is 324 meters. At what frequency is the radio station broadcasting? (Compare the wavelengths of the two radio signals in problem 2 and in this problem. Can you see why AM stations fade out when you drive under an overpass while FM stations do not?)

4. A student sets up a standing wave of wavelength 6 meters in a coiled spring by moving his hand up and down twice each second. What is the velocity of the wave?

5. A particular wave is described by the set of graphs shown below (note these graphs represent the same wave)



- a. What is the period of the wave? _____
- b. What is the frequency of the wave? _____
- c. What is the wavelength of the wave? _____
- d. What is the velocity of the wave? _____